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1876



AGRICULTURAL INSTRUCTIONS

FOR THOSE WHO MAY EMIGRATE TO

BRAZIL:

BY

NICOLAU J. MOREIRA, M.D.

TRANSLATED INTO ENGLISH AT RIO DE JANEIRO, AND BY ORDER OF THE
IMPERIAL BRAZILIAN GOVERNMENT.

SECOND EDITION.

NEW-YORK:
"O NOVO MUNDO" PRINTING OFFICE,
NO. 39 PARK ROW.
1876.



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1876.

15/11/16



The High Commissioners of the National Exhibition having resolved, as proposed by Commendador Joaquim Antonio de Azevedo, to reprint and to translate into the English language the pamphlet I wrote for the Exhibition of 1872, I thought it advisable to enlarge and to correct it, and at the same time to substitute the title by another, in my opinion, more appropriate in form and in substance, and better adapted to the ends to which this work is destined.

DR. NICOLAU JOAQUIM MOREIRA.

Rio de Janeiro—October, 1875



AGRICULTURAL INSTRUCTIONS

FOR THOSE

WHO MAY EMIGRATE

TO

BRAZIL

FIRST PART

GENERAL OBSERVATIONS.

As Brazil is almost wholly situated to the South of the Equator, the greater part of it being still covered by impenetrable forests, it enjoys a much more moderate temperature than other countries placed under the same latitude in the northern hemisphere.

The height of its mountains, the vastness of its surface, and the abundance of its waters, favors Brazil with a variety of climates, which, joined to the nature and fertility of its soil, give undoubted proofs of the fitness of this vast portion of South America for all branches of agriculture; its prodigious productive power is displayed in those immense forests which still extend for hundreds of leagues and which the devastating arm of civilized man has been, as yet, unable to annihilate; their depths contain choice products and at sight of them the most eminent European naturalists are filled with rapture.

“ Their delicious freshness (writes Hooker, contemplating

the Brazilian forests) enchants the traveller who admires at the same time the prodigious dimensions of the giants of those forests, the unheard of vigour of the luxuriant vegetation and the extraordinary variety of vegetable forms which they present.

"Not satisfied with producing this colossal vegetation nature also has dressed them with numerous parasites and flexuous climbers, which mingle their flowers and foliage with those of the trees that support them.

"Whilst European forests present a monotonous aspect, from their insignificant variety, the virgin forests of Brazil offer us a multitude of trees of different species, all varying not only in their dimensions, shape and aspect, but also in the shades of their leaves and the colours of their flowers."

And certainly the distinguished naturalist, whose words we quote, had good reason for thus describing the impression caused by contemplating the enormous cœsalpineæ, the monstrous laurinceæ, the tall icicæ, the elegant bertholeciæ, the proud araucariæ and the immense variety of shady palm trees, whose tops penetrating the clouds defy and disdain the tempest.

The importance of the Brazilian forests, however, is not only represented by its gigantic trees but also by the value which each of them possesses with relation to the arts, to house and ship building, to food and to medicine.

It is in the midst of this splendid emporium of most useful timber that the naval arsenals find the tapinhoá (*Silvia navalium*), the peróba (*Aspidosperma peroba*), the sucupira (*Bowdichia major*), the pequiá (*Aspidosperma eburnea*), the paracaúba (*Andira*), the saboarana, the grapiapunha, (*Apuleia polygamea*), the taxiuba, and the guarubú (*Peltogyne*); that civil engineering meets with the bitter and the stony angelins (*Machaerium andira*), the different kinds of canella, the graúna (*Melanoxylon*), the merindiba (*Terminalia*), the oily gruçahy (*Moldenhaurea*), the tabaco ipé (*Tecoma*); that cabinet makers find the jacaran-dá (*Machaerium incorruptibile*), the vinhatico (*Echiospermum*), satin wood (*Aspidosperma*), the sebastião d'arruda (*Phylocalyma*), the jequitibá (*Carianiana*), the gonçalo alves (*Astronium*

fraxinifolium), and the tortoise-shelled muirapinima (*Brosinum Aubletu*); that the arts extract oils, gums, resins, dyes and beautiful textile fibres; and medicine obtains valuable therapeutic resources, true succedanea of the agents of foreign materia medica (*).

If from the spontaneous products of nature, we turn to those due to human labour, still Brazil does not yield to other countries in the fertility of its soil.

Thus it is that whilst in Europe wheat and oats bear 20 for 1 and in Asia from 8 to 12 for 1, in Brazil they produce in cleared lands 60 for 1 and in prairies 30 for 1.

In some soils, 1,963 acres will give the following products in the proportions indicated :

| | |
|-------------|------------------|
| Cotton..... | 826 to 918 kilos |
| Coffee..... | 688.5 “ |
| Rice..... | 2.181 litres |
| Manioc..... | 3.636 “ |
| Maise..... | 1.818 “ |

Maise generally yields 140 for 1, beans 80 and rice 1,000, and whereas in the United States one acre of land gives 925,6 kilos of cotton, our poor lands produce 1,469 kilos and the best 4,407.

Some 375 years since an exhaustive system of culture was adopted everywhere, the axe, the firebrand and promiscuous

(*) Amongst the plants which furnish oils, butter and wax and which serve as food or are applied in the arts or in medicine the following are worthy of note : The bacabeira *cenocarpus bacaba*, 30 p. c. of oil; the indaiá-assú *attalea compta*, 20 p. c.; the macaúbeira *acrocomia sclerocarpa*, 30 p. c.; the Lent cocoa tree, *cocos flexuosus*, 60 p. c.; the pindobeira, *diplothemium caudescens*, 56 p. c.; the pindahyba, *xilopia cericea* (10 kilos of the fruit yield 130 grams of edible aromatic oil); besides the andu-assú, *anda-gomesu*; the bicuiba, *myristica bicuiba*; the copahyba, *copahyba nitida*; the wild mamono, *mabéa festuligera*; the carrapateiro, *ricinus communis*; the nhandiroba, *feuillea cordifolia*; the pao balsamo, *myrospermum erythrocydon*; the piqui, *caryocar braziliensis*; the carnaúbeira, *corypha cerifera*; the ucuuba, *myristica sebifera*, etc. etc.

For the manufacture of paper and for caulking purposes, the trees of Brazilian forests furnish excellent material, especially the following : the *astrocarium*, the *acrocomia*, the *bactris*, the *maurilia*, the *attalea*, among the palmaceæ; the *bromelia*, the *bilbergia*, the *tillandsia*; among the bromeliaceæ; the *cecropia*, the *urtica*, among the urticeæ; the *agave*, of the liliaceæ; the *musa* of the musaceæ; the *urena*, the *myrodia*, the *hibiscus*, of the malvaceæ; the *bombax*, the *eriodendron*, the *carolinea*, of the bombaceæ; the *bertholetia*, of the lecythidaceæ; and many of the *anonaceæ*, *apocynaceæ*, *asclepiadeceæ*, furnish- ing textile substances of different values, and which can substitute, if not rival, cotton, hemp and flax.

clearing extracted from the fertile lands of Brazil the elements of greatness and prosperity of future generations, but for all that the fertility of our soil has never deceived the hopes of the intelligent agriculturist who employs the proper method to obtain food and the means of contributing to the inexhaustible resources of the State.

The exportation of 54,474,126 kilos of cotton, 154,815,149 kilos of sugar and 148,385,454 kilos of coffee, of the total verified value of 151,562:591\$000 in 1874, (*) is a sufficiently valid proof, if such were needed, of the fertility of Brazilian soil.

Brazil therefore possesses a sufficiency of natural elements, to raise it to the rank of a first rate agricultural nation ; but, the vastness of its territory, its sparse population, the want of capital, which is absorbed by commerce, the absence of professional knowledge, the immobility of large sums employed in immense tracts of uncultivated land and the difficulty of communication, has retarded the progressive evolution of these elements.

Fortunately however, private enterprize, so full of good results in all branches of human knowledge, commences to appear, and the beneficial influence which the law now allows the Government to use is also being felt.

The opening of *roads, the exploration of important rivers,* and the *locomotive* whistling in the midst of our forests, penetrating into the interior of the country accompanied by the electric telegraph, conquer time, diminish space and join producing centres to consuming markets.

Model farms, proving the necessity of abandoning the present method of agriculture which exhausts the forces of the agriculturist without yielding an adequate amount of products; *agricultural institutes,* proclaiming the advantages to be obtained by uniting theoretical teaching to intelligent practice; *asylums,* where destitute orphans are received, obtaining food for the body and for the mind, by means of an education which enables them to become excellent overseers and the true agents between the small farmer and the rich agriculturist; *agricultural*

(*) Report of the Minister of Finance in 1875.

reviews, published by associations for promotion of national industry, propagating information respecting the progress of other nations, the invention of new machinery and agricultural implements, and investigating questions interesting to agriculture and the arts; discussions on the creation of *agricultural banks* where planters may obtain capital at a moderate interest and for long dates; *laws* respecting *limited liability* societies; the reform of our *mortgage law* of September 24th 1864 and the respective regulations which followed, as a preliminary step to the establishment of *territorial credit*; the establishing of *great colonial nuclei* in the centre of the provinces and of small agriculturists in the neighborhood of cities; the ascendancy which *high farming*, which endows generations, is gaining over the *primitive* which enriches the fathers to the detriment of the children; the recognition of the necessity of the division of labor, by separating the operations relative to the cultivation of products from those which concur in its preparation and exportation, obtaining, by this means, better results both as to its perfection and as to its commercial value; finally *private enterprise*, in combination with *government*, promoting the introduction into the country of the proper kind of industrious immigrants,—are the precursors of the day when the sun of Brazil will shine on the reform of our old system of agriculture and manufacture, reform the more important as the notion of *spreading instruction* throughout all classes of society has set a hold on the public mind, and the promulgation of the *salutary, beneficial, and highly humanitarian law* of September 28th 1871, that dried up the sources of slavery, which were incompatible with a country of liberty, dignifies industry and causes society to look upon the operative not as a mere tool, but as a man who, living by his worth, whilst he employs his physical force, makes, at the same time, efforts to free himself from the fetters of ignorant labor in order to employ rational activity.

Besides those promoters of agricultural progress which we have noticed, there are others not less important, whose beneficial influence will shortly be felt, such as: the creation of central mills for the preparation of the products of agricultural or extractive industry; the establishment of agricultural banks

that shall furnish planters with the capital which they require to improve their estates, by advances on the immense immovable value of their vast rural property; the authorization to grant to the banks that shall lend money to planters, in accordance with the law of September 24th 1864, an additional interest of 2 p. c. per annum, on the sums thus lent at an interest not exceeding 6 p. c. with a sinking fund of not more than 5 p. c. of the capital; the reform of the system of public teaching, by diffusing agricultural instruction in all its branches, the exemption from duties on machinery and agricultural implements, as well as on seeds and rare plants of all kinds, and lastly, the offer made by the Government, to import for account of the planters, plants, seeds, machinery and agricultural implements of the most perfect kind, which they may wish to employ on their estates, or domestic animals of the best breeds, wherewith to improve the existing ones.

On the other hand, the system of rotation of crops followed by farm yard manuring, which are the first steps towards *high farming*, commence to attract the attention of planters who, whilst taking advantage of the knowledge acquired by experience and by practice, recognize the salutary principles taught by physics and by chemistry; it is not therefore surprising that many planters should now use the plough, the harrow and the turbine, as well as other instruments and apparatus which modern science employs to obtain in a shorter space of time a larger crop of better quality.

Nearly 13,000,000 square kilometres (*) and consequently one fifteenth of the surface of the globe, constitute the fertile territory of Brazil. Its geographical position, its 1,200 leagues of coast and its 42 ports give it the indisputable right to be considered the great commercial centre of South American continent.

Brazil, as an agricultural country, is divided into two great zones—the *tropical* and the *temperate*; such however is the nature of its soil, the elevation of its mountains, always covered

(*) Brazil represents an area of 290,047 square leagues or 12,634,447 square kilometres, with a population of 10,380,000 free individuals, 1,400,009 slaves and 2,000,000 aborigines.

with luxuriant vegetation, that not far from places influenced by a high temperature, others are found which enjoy delightful and temperate climates, we cannot therefore be surprised at meeting in the extreme north of Brazil products pertaining to the southern provinces.

Thus cotton, which grows luxuriantly at Maranhão and Pernambuco, is seen equally vigorous and beautiful in the open land of Sorocaba, in the province of São Paulo; coffee, which enriches the planters of Minas and Rio de Janeiro, flourishes on the mountains of Baturité in Ceará and also on the banks of the Amazon and at Rio Grande do Sul; the sugar cane is spread all over the Empire, and cocoa, which appeared unable to cross the limits of Pará bears fruit in Bahia, in Rio de Janeiro and in many other provinces.

Of the immense territory of Brazil barely 256,886 square leagues are cultivated, with only 46 inhabitants for each league, there being, according to the last census, 17,454 agricultural establishments in 13 provinces.

If Brazil without those means which will shortly be placed at its disposal, could present such an imposing quantity of products, we may fairly assume that a large increase will appear when all the germs of prosperity which it possesses are developed.

Improvements in the culture of *cotton* and *sugar cane*, the former of which is already well known in Europe as superior to that of many countries, and the latter which will shortly rival that of the French colonies if planters continue to apply agricultural chemistry and mechanics; the preparation of coffee, this most important element of the wealth of Brazil, the quality of which is such as to make it undistinguishable from Indian or Asiatic coffee in European markets; the proper manipulation of our *tobacco*, which has been known in Europe, since the reign of Dom João V, where its active principles, agreeable taste and smell are acknowledged; the culture of *indigo* which was encouraged by the Marquis of Lavradio, but is at present almost forgotten, although our fields abound in *indigofera anil*, *solanum cœruleum* and many other plants which supply this valuable coloring substance; that of *cochineal*, introduced into this

country by Dom Luis de Vasconcellos, and which finds, growing spontaneously in the woods of Brazil the *urumbeba*, the peculiar food of the *cocos cacti*; the culture of *wheat*, the most important of all alimentary cereals, and which, from the centre of the South of Brazil, finds a most appropriate climate for its development, as was proved by trials made in 1817; that of *vanilla*, which is in every respect superior to that of Mexico or Bolivia, especially with regard to weight and aroma; that of *flax* which grows exuberantly in our southern provinces; that of *indigenous silk*, the practical study of which brought a pecuniary remuneration to Paulo Fernandes Vianna and Antonio José Vieira da Victoria in 1817; that of the *bombyx mori*, commenced in Pernambuco by Maurice of Nassau and at present progressing at Rio Grande do Sul; that of the *vine*, already acclimatized here and the produce of which is commencing to be appreciated on account of the perfection to which it has arrived; and lastly, of the many and beautiful species of *vegetable textile fibres*, which lately obtained so much praise in Europe, being considered superior to cotton and jute and rivaling Cairo flax, will necessarily greatly increase the value of our exports.

Brazil possesses 1530,^k 78 of railroad under traffic and 699 kilometres building, besides 1,568 kilometres in concessions granted to 11 enterprises with a provincial and general government guarantee of interest.

There are 6,580 kilometres of electric wire laid on, covering 4,600 kilometres with 82 stations, besides the sub-marine lines of the *Brazilian & Western Telegraph Company* and those which unite the North to the South of the Empire, and the capital to the Republic of Uruguay.

There are several well established cotton manufactories giving employment to many hundred Brazilian and foreign operatives of both sexes and all ages, consuming a staple product and worked by water and steam power.

Sundry agricultural institutes have been created. There are in operation: one in Bahia, one in Pernambuco, under the inspection of the respective presidents, and another in Rio de Janeiro under the minister of agriculture.

Schools of practical agriculture are been organized in the first

two. In the latter, under the direction of Viscount of Bom Retiro, there is already advantageously established a *model farm* in charge of Dr. Glazi; an *agricultural asylum* under Commendador J. A. de Azevedo, and a manufactory of *Chili hats* made of the fibre of the *bombanassa*, cultivated in the Botanical Garden, where also more than 27 species of manioc may be seen, besides 14 varieties of sugar cane, Havana and Djebel tobacco, Moca, Bourbon and Murta coffee, sarracen wheat and thousands of other useful and ornamental plants, whilst in the chemical laboratory, annexed to the institute, analyses of soils and agricultural products are constantly being made.

There is a scheme of a zoological garden the beneficial effects of which will influence zootechnical studies.

The Acclimatizing Society which was founded November 13th 1872 through the suggestion of Commendador Joaquim Antonio de Azevedo, under the direction of Viscount of Itaúna corresponding with similar European and American societies and presided by Councillor José Liberato Barrozo, is daily gaining strength and doing good service to the country.

There is besides, at the Pedro II colony, very near the city of Juiz de Fora in the province of Minas Geraes, a school of agriculture where the various branches of agricultural science are taught and the advantages of rational agriculture are shown by examples.

Amongst the publications that undertake to propagate the true principles of agriculture, the following are the chief: *Review* of the Rio de Janeiro Agricultural Institute, edited by Dr. Miguel Antonio da Silva, and the *Auxiliador da Industria Nacional*, under the management of Dr. Nicoláu Joaquim Moreira, organ of a patriotic society which for 40 years has done good service to agricultural and manufacturing industry, not only by regularly publishing a *Review*, but also by printing several important manuals relating to the various branches of rural economy.

The idea that only Africans could be profitably employed on Brazilian states has fortunately completely died away.

Free labor is making its way, slowly but surely through all the provinces of the Empire. Since the cessation of the slave

trade, 28 years ago, the mortality among slaves and numerous manumissions have diminished our slave population, nevertheless the export of coffee, from Rio de Janeiro, which in 1838 amounted to 4,339,830 kilograms, have increased to 137,449,797 kilograms; S. Paulo which at that time exported only 2,665,045 kilograms, sends now to market no less than 62,173,385 kilograms.

Pernambuco, Ceará and Maranhão are in the same position.

Brazil then, considering its vastness, the fertility of its soil and the salubrity of its climate, must necessarily become an attractive point to industrious emigrants and colonists who wish to work and explore for themselves the elements of wealth which Providence has so liberally scattered over this portion of South America.

And truly in no other part of the world will the immigrant meet with the advantages offered by Brazil.

All the products of Europe, Asia and Africa thrive on this blessed soil as in their native land; no rigorous winter enervates the arm of the agriculturist, no intense cold blights his plantations; on the contrary, a perpetual spring produces fruitfulness; the seed is multiplied a hundred fold and the planter's efforts are well remunerated.

With a view to attract intelligent immigrants in order to expand the several branches of industry and especially agriculture, Government has employed every effort proportionate to the means at their disposal, not only directly promoting immigration and colonization, but also protecting private enterprise and propagating in Europe the knowledge of the economical, social and political condition of Brazil and taking measures tending to improve the condition of immigrants and the welfare of colonists.

An official colonization agency has been established in the city of Rio de Janeiro, with a view to guide the first steps of the newly arrived, assisting them in those affairs which they, owing to their ignorance of the language and customs of the country, are unable themselves to manage, to advise and give them any information required to hear their complaints, and, when just present them to Government; it also reports on

projects for introducing immigrants, makes the respective contracts and despatches the immigrants to their destination.

In the provinces, by order of the minister of agriculture, committees are named to assist the presidents in the reception of immigrants, and they employ means to obtain for them a friendly reception and means of livelihood by agricultural work or by the exercise of other trades.

Every immigrant that arrives at Rio de Janeiro, whether spontaneously or for government account, has a right to board and lodging, those who remain in the city of Rio de Janeiro during eight days and the others till an opportunity occurs for them to proceed to their destination.

At present, no sooner do the immigrants reach the capital than they are sent into the interior to the high lands, there to be acclimatized.

With the laudable intent to create a uniform regime for State colonies and to guarantee the welfare of their inhabitants, the following regulations were approved by Decree No. 3,784 of January 19th 1867 and signed by Councillor Manoel Pinto de Souza Dantas, at that time minister of agriculture.

REGULATIONS FOR THE STATE COLONIES.

CHAPTER I.

THE ESTABLISHMENT OF THE COLONIES, THE DISTRIBUTION OF LAND AND THE CONDITIONS FOR THE GRANTS AND TITLE DEEDS.

Art. 1. State colonies shall be established by Decree of the Imperial Government; the respective names being indicated, and the colonial district having been previously chosen, measured and marked out by a government engineer.

Art. 2. Every colonial district shall contain in its perimeter an area equivalent to, at least, a territory of four square leagues, or 174,240,000 square metres, divided into urban and rural lots the most convenient position for the township having been previously chosen.

Art. 3. The engineers in charge of the works belonging to the colonial establishments, shall draw up a general plan which shall contain, not only the designation of the lots measured and marked out, the direction of projected roads, bridges, rivers and large streams and every other topographical indication, but also the lands reserved for the township and which, with the assent of the Director of the colony, shall have been allotted to streets, squares, common schools, churches, cemetery, administrator's house, jail and other colonial buildings. Three copies shall be made of these plans, one for the archives of the colony, another for the presidency of the Province and the third for the Directory of public lands and colonization.

Art. 4. The rural lots shall be divided into three classes: those of the first class, shall contain an area of 125,000 square braças or 605,000 square metres, those of the second, 62,500 square braças or 302,500 square metres, and those of the third 31,250 square braças or 150,250 square metres, equivalent to $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ of the lots of 250,000 square braças or 1,210,000 square metres, mentioned in Art. 14 § 1st of the law of September 18th, 1850.

The urban lots may be divided into different classes, and the frontage may vary from 10 to 20 braças or from 22 to 44 metres and the depth from 20 to 50 braças or from 44 to 110 metres, according to the position of the land reserved for the township. All the above mentioned lots shall be indicated on the plan of the colony by a number.

Art. 5. The price of the square braça (4.48 square metres) both of the rural and the urban lots shall be arbitrated by the Director of the colony, the fertility, the situation and other circumstances of the land, being considered, according to the descriptive memorial of the engineer, and in proportion as the clearing of the colonial lands shall proceed.

This arbitrament may vary between the limits of 2 and 8 réis for the rural and of 10 and 80 réis for the urban lots; after the approval of the president of the province, these shall also be indicated on the plan.

Art. 6. Colonists may on arrival freely choose their lots,

paying in cash the price fixed, according to the respective classification.

An additional 20 per cent on the price marked shall be charged to those who buy on credit, and this payment shall be made in five equal instalments to count from the end of the second year of their establishment.

If however the colonist pay before the instalments are due, an abatement of 6 per cent shall be made on the whole of the instalment or instalments anticipated.

Art. 7. The sons of colonists over 18 years of age shall have the right to choose lots on the same conditions, and to settle separately if so willing.

Art. 8. The rural lots shall be delivered with the respective frontage and depth measured and marked out, and with a path of from 10 to 20 braças or from 22 to 44 metres in length, at both the lateral boundaries, indicated by three posts.

These lots shall contain an area of 1,000 square braças or 4.840 square metres cleared, and a temporary building large enough for a family.

Art. 9. There shall be two kinds of title deeds for the colonists, namely: provisional deeds, or those which indicate the lots, and definitive deeds of the property, passed according to the annexed models No. 1 and 2.

The former, signed by the director of the colony, shall be delivered to the colonists who may buy on credit; the latter, signed by the president of the province, shall be given to those who shall have paid their debit to the public treasury. Both the provisional and the definitive deeds shall be given gratuitously to the colonists, within three months from the day on which they shall take possession of their lots.

Art. 10. When the colonist buys on credit, he shall not be allowed to subject either the lands or the improvements on them to any real encumbrance, as one and the other are mortgaged to the public treasury as a guarantee of his debts to the State and of the fines he may incur.

It is understood that the foregoing clause does not comprehend legitimate or testamentary inheritance or legacy, in which

cases the property shall pass to the heir or legatee with the encumbrance.

The provisional title deed, mentioned in Art. 9, shall be registered in a special book, each page of which shall be signed by the director.

Art. 11. The definitive title deeds shall contain: 1st, an exact description of the boundaries of the lot; 2nd, the extent and direction of the divisory lines with the declaration of the needle; 3rd, the area and the name of the adjoining proprietors; 4th, the conditions and encumbrance to which, in accordance with these regulations, the purchasing colonists are subject.

When the lot shall be of an irregular form, the engineer shall design and sign a small map of the same on the title deed.

Art. 12. Every colonist who, within two years the date of taking possession of the lot purchased, shall not have established on it his habitual dwelling and effective culture, shall lose his right to the same, and, after the necessary advertisements, it shall be sold by public auction.

From the proceeds of the sale, there shall be deducted; first, the amount which the negligent colonist may be owing the State; and secondly, the amount of any other proved debts, which he may be owing; and if any sum remain it shall be delivered to the said colonist, or, in his absence, immediately paid into the provincial treasury.

The same steps shall be taken, at any time, with respect to rural or urban lots of lands, whose owners shall abandon them for more than two years.

CHAPTER II.

THE ADMINISTRATION OF THE COLONIES.

Art. 13. In the State colonies, there shall be a board composed of eight members, namely: the director, who shall preside, the medical assistant, and six others, chosen from among the colonists who shall have paid their debts to the State.

Art. 14. Those colonists who shall be soonest free from their debt, shall be members of the first board; and when more

than six individuals are in the same position the president of the province shall choose from among the names proposed by the directors, those colonists which he may consider most fitting.

The duration of this provisional board shall be for only one year.

Art. 15. At the expiration of this period, the director shall send to the president of the province a list of the names of twelve colonists who, to the condition above mentioned, shall join intelligence and good conduct; to the list there shall be annexed such information as may guide the president in the choice of the six members of the permanent board.

Art. 16. This board shall be triennial, and the director, three months before the expiration of that time, shall make the necessary proposal for the new board, which shall be installed on the first day of the following year.

Art. 17. The board may pass resolutions when the president and four other members be present.

Art. 18. In urgent cases, when meetings of the board may be difficult and, through delay the decisions become prejudicial to the interest of the colony, the director may resolve alone, explaining his reasons for so doing at the first meeting of the board to be noted in the respective book of the proceeding of the board.

Art. 19. If from the continuance of the meetings of the board any detriment arise to the colony, the director may adjourn them.

Art. 20. The director may also suspend the execution of the measures resolved on by the board if contrary to law or to the clauses of these regulations, or if detrimental to the colony.

In this case, as also in those mentioned in the two foregoing articles, he shall immediately inform the president of the province of the steps taken by him.

Art. 21. If the president of the province approve his act, then the president, if he thinks proper, may dissolve the board, and order a new proposal to be made for the nomination of another, after consulting the Imperial Government.

Art. 22. So long as the colony shall not contain a sufficient number of colonists, in the above mentioned condition, to

may require, the amount of which, as also the cost of the clearing, of the temporary house and of all advances made, joined to the price of the lands, are to be reimbursed in the manner herein provided.

Art. 32. If there be work to be done in the colony, those colonists who may desire it shall be employed thereon for the first six months.

Art. 33. The director shall so distribute the work, that each adult of a family shall receive at least 15 days wages per month or 90 days in the half year.

For the execution of this clause two minors shall be counted as one adult.

Art. 34. The work for the newly arrived colonists, shall, as much as possible, consist in the preparation of the road in continuation of their frontage, in clearing and in building their provisional dwellings, so that there shall always be from 20 to 50 lots ready for the establishment of new colonists.

Art. 35. In the colonies, where the inhabitants, shall number more than 500, the wages of the colonists shall suffer a discount of not more than 5 p. c., which shall be paid into the respective treasury, after approval by the president of the province.

CHAPTER IV.

SUNDRY CLAUSES.

Art. 36. Every colonist who shall not work assiduously on his farm or at his trade, shall be warned by the director or, if the board so order it, deprived of colonial work and favours, if he does not mend.

Att. 37. The colonist, who through laziness or bad habits, shall be deemed incorrigible, shall be excluded from the colonial regime, and expelled from the respective district by the president of the province, if he judges it convenient to do so for the warfare and interest of the colony; his lot and property being disposed of according to Art. 12.

Art. 38. Colonist, who may desire to make a remittance to a foreign country, may deliver the amount to the director, who shall pass a receipt mentioning the sort of money received.

Art. 39. The director shall immediately pay the amount into the treasury, with every particular relating to its destination, in order that the remittance may be made by the Government at the exchange of the day, free of expense to the colonists.

Art. 40. No slaves will be allowed, under any pretext whatever, to dwell in the colonies which may be established henceforward.

Neither shall any persons who take slaves with them be allowed to establish in the existing colonies.

Art. 41. The director shall present to the president of the province every six months a detailed report on the state and progress of the colony during the half year, in conformity with model n° 3; and, annually, a statement of the revenue and expenditure for the following financial year, organized by the colonial board out.

Art. 42. The director shall also send quarterly to the treasury an account of all amounts paid.

Art. 43. Whenever the Government may deem it convenient, colonial agricultural asylums shall be founded for those minors under 18 years of age, who may be orphans, or whose parents may have abandoned them.

In these asylums the Government will board, clothe and furnish medical attendance to the inmates and will have them instructed according to age and strength, in those mechanical works and trades which have an immediate relation to agriculture.

Art. 44. The clauses of these regulations, where applicable, shall be extensive to the existing colonies.

Art. 45. The special instructions, with regard to the execution of these regulations, shall be promulgated by the minister of agriculture, commerce and public works.

Palace of Rio de Janeiro, January 9th 1767.—*Manoel Pinto de Souza Dantas.*

Sundry general, provincial and private colonies have been created in various provinces of the Empire.

Some, already emancipated, are progressing, strengthened by

those branches of industry which they cultivate, others more or less prosperous, are still under the regime, and toiling to attain the end to which others have arrived, and if there be stationary or decaying colonial nuclei the fact ought to be attributed to the country but to the laziness of the immigrants; as a proof we may adduce the fact that wealth and prosperity are enjoyed by about 130,000 Germans and descendants of Germans immigrants scattered over the provinces of Rio Grande do Sul, Santa Catharina, Paraná, etc., etc.

Finally, the measures which the government of the country intend to carry out in order to improve this branch of the public service are indicated in the following words of the minister of agriculture:

“ We must adopt an aggregate of measures perfectly adequate to satisfy the different requirements of the service, some relative to civil legislation, others directly concerning the means for receiving and establishing immigrants, and regarding the regime and inspection of the colonies. Among the former is the law which regulates the hire both of native and foreign laborers. The latter includes the creation of an office specially devoted to the management of immigration and colonization, to the selection of Governments lands, the sale of them in lots at low prices, the establishment of sanitary measures for vessels carrying immigrants, the creation of colonial nuclei on fertile lands near large markets, the improvement of means of communication for the existing nuclei and for those that may be established, the creation of a territorial tax which may contribute to the utilization of lands, hitherto uncultivated, in the neighborhood of cities and important towns.

“ Improve the colonial nuclei at present in existence, giving them easy means of communication with the nearest markets, and other necessary advantages to enable them to become attractive; prepare lots of land in the neighborhood of railroads and not far from markets and towns where the immigrant may meet with easy sale for the product of his labor; substitute the official colonial agency, created by decree of April 20th 1864, by an inspector general with more ample powers, which should comprize the introduction, reception and establishing of

immigrants ; attaching to the same an auxiliary board composed of natives of foreigners, to be consulted in matters refering to colonization and which should coopetrates in the reception and establishing of immigrants."

And so it ought to be, because if, as Ribeyrolles says, in Europe the problem of production depends on the means of giving to a too numerous population the land which it lacks ; in Brazil, on the contrary, the problem is how to give to the richest soil in the world, the population which it needs.

Table of Quantities and value of our most important agricultural products—Coffee, Sugar & Cotton
yearly exported from 1864 to 1874.

| Years | COFFEE | | | SUGAR | | | COTTON | | |
|-----------|-------------|---------------|---------------|-------------|--------------|---------------|------------|--------------|---------------|
| | Quantity | Value | Average Price | Quantity | Value | Average Price | Quantity | Value | Average Price |
| | Kilogr. | Réis. | | Kilogr. | Réis. | | Kilogr. | Réis. | |
| 1864—1865 | 162,084,000 | 64,144,555\$ | \$396 | 107,616,289 | 16,282,694\$ | \$151 | 25,858,264 | 31,558,636\$ | 1\$245 |
| 1865—1866 | 149,593,285 | 61,156,054\$ | \$408 | 131,458,293 | 19,231,940\$ | \$146 | 42,636,144 | 46,817,408\$ | 1\$100 |
| 1866—1867 | 189,386,282 | 69,742,573\$ | \$368 | 117,704,813 | 12,674,427\$ | \$107 | 37,728,862 | 23,741,508\$ | \$629 |
| 1867—1868 | 213,646,938 | 83,610,731\$ | \$391 | 129,091,985 | 22,806,316\$ | \$176 | 47,669,584 | 32,270,530\$ | \$677 |
| 1868—1869 | 228,041,051 | 90,517,828\$ | \$397 | 130,065,935 | 28,046,572\$ | \$215 | 41,404,470 | 36,488,401\$ | \$881 |
| 1869—1870 | 186,602,219 | 77,094,020\$ | \$413 | 138,118,260 | 29,264,604\$ | \$211 | 43,024,065 | 44,033,960\$ | 1\$023 |
| 1870—1871 | 125,834,488 | 82,715,084\$ | \$650 | 116,983,303 | 17,857,135\$ | \$152 | 46,519,446 | 23,930,298\$ | \$514 |
| 1871—1872 | 136,976,271 | 70,222,419\$ | \$312 | 172,526,730 | 27,923,148\$ | \$161 | 83,543,317 | 46,645,800\$ | \$558 |
| 1872—1873 | 209,772,673 | 111,285,466\$ | \$549 | 183,984,234 | 27,725,672\$ | \$151 | 44,618,060 | 26,824,278\$ | \$601 |
| 1873—1874 | 168,385,451 | 110,172,535\$ | \$654 | 154,815,149 | 17,758,557\$ | \$114 | 54,474,126 | 23,631,498\$ | |

Table showing the principal Brazilian products exported to foreign countries, by quantities and official value, in the financial years of 1871 to 1874.

| PRODUCTS | UNITS OF MEASURE | 1871—1872 | | | 1872—1873 | | | 1873—1874 | | |
|-------------------------|------------------|---------------|-------------|-------------|---------------|-------------|-------------|---------------|-------------|-------------|
| | | AVERAGE PRICE | QUANTITY | VALUE | AVERAGE PRICE | QUANTITY | VALUE | AVERAGE PRICE | QUANTITY | VALUE |
| Rum..... | Litres | \$139 | 6,671,295 | 931,920 | \$144 | 3,664,807 | 526,387 | \$148 | 3,380,649 | 472,174 |
| Cotton..... | Kilograms | \$558 | 83,543,317 | 46,645,609 | \$601 | 44,618,064 | 26,824,376 | \$434 | 54,474,126 | 23,631,459 |
| Sugar..... | " | \$161 | 174,596,730 | 27,923,148 | \$151 | 183,984,290 | 27,735,672 | \$114 | 154,815,149 | 17,758,557 |
| Horse hair..... | " | \$114 | 559,631 | 63,894 | \$931 | 558,743 | 520,803 | \$836 | 587,642 | 491,316 |
| Coffee..... | " | \$512 | 136,976,271 | 70,292,419 | \$549 | 206,773,653 | 115,285,463 | \$654 | 168,385,484 | 110,162,559 |
| Pea nuts..... | " | \$129 | 2,507,621 | 324,846 | \$134 | 3,294,029 | 443,728 | \$163 | 3,949,474 | 532,688 |
| Hides..... | " | \$579 | 21,490,113 | 12,450,072 | \$583 | 25,516,274 | 14,883,687 | \$68 | 21,637,338 | 11,538,953 |
| Diamonds..... | Grams | \$98,945 | 11,366 | 1,135,963 | 119,575 | 13,422 | 1,591,514 | 127,858 | 8,782 | 1,023,698 |
| Tobacco & its prep..... | Kilograms | \$557 | 12,190,341 | 6,806,234 | \$404 | 16,900,874 | 6,834,807 | \$386 | 13,900,398 | 5,311,061 |
| India rubber..... | " | \$849 | 5,683,166 | 4,800,858 | \$856 | 5,087,735 | 4,363,366 | \$572 | 6,736,314 | 10,631,614 |
| Worms..... | " | \$520 | 17,389,554 | 4,027,363 | \$214 | 15,567,855 | 3,337,604 | \$173 | 13,436,308 | 2,329,712 |
| Wool..... | " | \$539 | 1,200,267 | 579,143 | \$186 | 623,966 | 309,866 | \$375 | 816,304 | 306,614 |
| Building timber..... | Sundry | \$ | 1,249,373 | 1,249,373 | \$ | 494,505 | 1,123,712 | \$ | 945,515 | 967,826 |
| Gold dust and bars..... | Grams | \$1,027 | 811,070 | 833,648 | \$1,036 | 494,505 | 4,939,833 | \$1,032 | 945,515 | 976,324 |
| Sundry products..... | | \$ | | 6,224,790 | \$ | | 2,967,488 | \$ | | 2,044,518 |
| | | | | 190,222,541 | | | 212,881,341 | | | 188,189,116 |

TABLE OF THE RAILROADS OF BRAZIL.

KILOMETRIC DISTANCE

ON TO THEIR DUCTS.

e inhabitants 4,960 square re.

ers perfectly in the dense

rs which run he impetuous ; the *Tocantins*, serving as fertilizing by y wind. to floods ; in avy rainfalls. rest of the

é mountains, ense forests in the neigh- for civil and d medicinal, cies of palm fruits, agre-

the last census.

Table of Quantities and value of our most important agricultural products—Coffee, Sugar & Cotton yearly exported from 1864 to 1874.

| PROVINCES | COFFEE | | SUGAR | | COTTON | | |
|--------------------------------|-------------------------|---------------------------------------|---------------|----------|--------------|--------------|--|
| | NAMES | TERMINAL STATIONS | UNDER TRAFFIC | BUILDING | UNDER SURVEY | TOTAL LENGTH | |
| | | | | 138,0 | | 139,0 | |
| General R. R. under survey: | | | | | | | |
| Alagoas..... | Piranhas..... | Piranhas & Jatobá..... | ..... | ..... | 104,5 | 104,0 | |
| Parahyba..... | Conde d'En..... | Capital & Alagoa-Grande..... | ..... | ..... | 140,0 | 140,0 | |
| Pernambuco..... | D. Izabel..... | Antonina & Curitiba..... | ..... | ..... | 83,0 | 83,0 | |
| Idem..... | Curitiba..... | Curitiba & Miranda(Mato Grosso)..... | ..... | ..... | 1,500,0 | 1,500,0 | |
| Rio de Janeiro..... | Pedro II. (branch)..... | Trunk line, Pedro II. & R. Verde..... | ..... | ..... | 356,0 | 156,0 | |
| Idem..... | Barra-Manaus..... | Barra-Manaus & Bananal..... | ..... | ..... | 30,0 | 30,0 | |
| Santa Catharina..... | Pedro I..... | Capital & Porto-Alegre..... | ..... | ..... | 384,0 | 84,0 | |
| S. Pedro do Sul..... | Porto Alegre..... | Porto Alegre & Uruguanaya..... | ..... | ..... | 500,0 | 50,0 | |
| Idem..... | Rio-Grande..... | Rio-Grande & Alegre..... | ..... | ..... | 400,0 | 400,0 | |
| S. Paulo..... | Sant'Anna..... | N. João do Rio-Claro & Sant'Anna..... | ..... | ..... | 650,0 | 650,0 | |
| Provincial R. R. under survey: | | | | | | | |
| Alagoas..... | Norte..... | Jaraguá & Jacuhybe..... | ..... | ..... | 125,0 | 125,9 | |
| Maranhão..... | Caxias..... | Caxias & S. José de Cajazeiras..... | ..... | ..... | 68,690 | 150,0 | |
| Rio Grande do Norte..... | Ceará-Mirim..... | Natal & Ceará-Mirim..... | ..... | ..... | 41,0 | 41,0 | |
| Pernambuco..... | Gomez..... | Gomez & Bebedouro..... | ..... | ..... | 43,0 | 43,0 | |
| Idem..... | Limoeiro..... | Recife & Limoeiro..... | ..... | ..... | 93,85 | 93,85 | |
| Idem..... | Centro..... | Recife & Victoria..... | ..... | ..... | 53,8 | 53,8 | |
| Rio de Janeiro..... | Petropolis..... | Maná & Petropolis..... | ..... | ..... | 5,624 | 24,774 | |
| Idem..... | Magé..... | Magé & Theresopolis..... | ..... | ..... | 31,0 | 31,0 | |
| Idem..... | Pirahy..... | Pirahy & Rio Preto..... | ..... | ..... | 39,0 | 33,0 | |
| Idem..... | Campes & Tombos..... | Campes & Valle do Muriaé..... | ..... | ..... | 167,0 | 160,0 | |

There are further 68 projected railways of which 7 are general and 61 provincial, besides those mentioned in decree of September 1873, which grants a guarantee of 7 p. c. on a capital of 100,000-000\$000 to be employed in building railroads which from a producing centre shall proceed in the direction of an exporting centre.

SECOND PART.

THE PROVINCES OF BRAZIL CONSIDERED IN RELATION TO THEIR SPECIAL CULTURES AND THEIR NATURAL PRODUCTS.

AMAZONAS.

The province of Amazonas numbers 56,631 free inhabitants and 1,183 slaves, (*) spread over an area of 2,874,960 square kilometres, nearly a fourth part of the whole Empire.

Thousands of aborigines some half civilized, others perfectly wild live on the banks of the rivers or wander in the dense forests.

Besides the numerous brooks, streams and rivers which run in different directions, the gigantic river Amazon, the impetuous *Maedira*, the *Rio-Negro*, the *Solimões*, the *Tapajoz*, the *Tocantins* and others ostentatiously display their majesty, serving as means of communication, and at the same time fertilizing by their floods the immense valleys through which they wind.

The climate is hot and damp, the lands subject to floods; in some localities the heat is mitigated by frequent heavy rainfalls. If we exclude the swamps near some rivers, the rest of the country is healthy, and specially Manaus.

The soil is flat with the exception of the Parimé mountains, to the north, and is mostly covered with immense forests containing trees which attain colossal proportions in the neighbourhood of the great rivers, where the best timber for civil and ship building abounds, as also many dyewoods and medicinal, oil bearing and textile plants, and numberless species of palm trees, yielding the delicious palm cabbage, pleasant fruits, agre-

(*) The population of the provinces is given according to the last census.

Sarsaparrilla, *piassaba*, *gummiferous*, *balsamic*, *fibrous* and *medicinal* plants, and those bearing silk and cotton are abundant on the low lands of Pará, as are also those that yield edible products.

The *sarsaparrilla* and the *India rubber* of Pará are superior to those from Java; they are spread over an immense tract, which account for the rural populations looking upon these products as heir only source of wealth.

The *India rubber* tree is now rationally cultivated; from 6,000 trees a net profit of 5,000\$000 may be obtained, as each tree yields on an average 8 pounds of rubber.

The advantages to be derived from the cultivation of cocoa are too well known to be described here; it is therefore sufficient to state that 1,000 trees produce about 70 arrobas of fruit, during 80 years, requiring only the care that can be bestowed on them by one man, each crop leaving a net profit of 500\$000.

The cocoa produces the nut from which chocolate is made; a kind of butter and medicinal oils are also extracted from it. From the rind, rich in potash, soap, superior to the Spanish, is made and from the pulp which involves the nuts, a very refreshing drink is prepared and also an aromatic kind of rum.

The *cocoa* tree is very long lived, at Pará and Amazonas trees planted by the jesuits, are still in existence.

The *guarana* is cultivated in some districts of Pará and also also the *urucú*. Those who are acquainted with the value of these products in industry, in medicine and as food, may form an adequate idea of the profits to be obtained by cultivating these plants in a province whose soil is adapted to their culture.

The *Sugar cane*, introduced into the province in 1867, is cultivated under the old system, the product, however, has been somewhat improved by the introduction of new apparatus and steam power. The attention of planters, however, is almost wholly absorbed by the preparation of rum and brown sugar for exportation.

The *tobacco*, especially that of Irituia, which is of superior quality, is all consumed in the province.

Cotton grows easily and has good qualities, its staple is fine, white and strong. Its culture however is insignificant.

Manioc flourishes in Pará; and in rather sandy soils, 7,370 litres of *farina* are obtained from 330 square metres.

The crops of rice are astonishing and the product is of superior quality, principally that of Aracá.

Maize is planted in any season and gives three crops in a year.

Arrow-root grows abundantly; both the long and the one called *mão de onça* (panther's paw) and furnish delicate furnish delicate *fecula*.

Carnaúba is being largely cultivated in consequence of the great utility of its products in industry.

Coffee, if it were cultivated in a sufficient quantity for the consumption of the province, would leave large returns as in some place it is exactly like Moca coffee.

The extraction of *oil of andiroba*, for which there is a constant demand, would be very profitable if better conducted.

Bragança, Irituia, Vigia, Cametá, Monte-Alegre, Santarem, Obidos are good agricultural districts; the healthiness of the climate is shown by the strength and energy of the inhabitants.

At Marajó, stock-breeding is carried on largely. On this island there are upwards of 200 breeding estates.

The banks of the Anajaz are fertile and abound in *rubber co-coa* and *andiroba* trees.

The best rubber on the Pará market is from Mapuá, where *Pará nuts, vegetable oakum, jutaicica, tobacco* and *urucú* are abundant.

Chaves and Soure are well adapted for cattle and horse breeding.

At Muaná the chief products of agriculture and industry are: *Sugar cane, cotton, rice, manioc, rubber* and *andiroba*.

At Santarem there is a colonial nucleus formed by North Americans and Englishmen. This soil is exceedingly rich in hums, the climate is healthy and the drinking waters are wholesome. Two roads join this nucleus to Ipanema and to Diamantina, and intercourse with the capital is maintained by the river Tapajoz.

A new agricultural colony has just been established, under the name of Benevides, composed of recently arrived Frenchmen.

In the financial year 1873-74, Pará, besides other agricultural products, exported :

| | | | |
|----------------------|-----------|-------|-----------------|
| India rubber..... | 6,384,779 | kilos | 10,176,907\$000 |
| Pará nuts..... | 3,050,594 | " | 505,397\$000 |
| Hides..... | 1,530,880 | " | 481,233\$000 |
| Sundry products..... | | | 1,267,088\$000 |

MARANHÃO.

The province of Maranhão has an area of 696,960 square kilometres and 284,101 inhabitants, of which 74,939 are slaves.

The climate is hot and damp, the heat on the coast being mitigated by the sea breeze and by heavy rainfalls and thunder storms from December to May, and by slight showers (*chuvas de cajú*) from October forward.

This province is mountainous in the interior with extensive plains on the sea-board, it is traversed by several navigable rivers and covered with forests and virgin woods; the climate is healthy, with the exception of the banks of the river Parahyba.

Among the most important natural products of Maranhão we may mention: the *carnaúba*, the *cocoa*, the *cajú*, *vanilla*, *India rubber*, and *sarsaparilla*, beautiful *timber* for ship and house building and for cabinet making, and valuable *medicinal* plants, which might collected and their therapeutic virtues examined, that they might not only compete with exotict ones in foreign markets, but also constitute the future Brazilian materia medica, in which study both in this province and in Pará, a great deal was done by the lamented botanist Lacerda whose M. S. are in the National Public Library.

Cotton is unquestionably the chief agricultural product of Maranhão; *manioc*, *rice*, *coffee* and the *sugar cane* are however, also cultivated, and often not only satisfy the requirements of the interior but are also exported.

Maranhão *cotton* is one of the best which comes to market, its long and white staple is admirably adapted for dyeing and, as to quantity, in more than one quinquennium the value of the exports reached the sum of 24,400,000\$000, although the province has lost upwards of 24,000 slaves.

The cultivation of cotton in Maranhão is anterior to 1,690

and in primitive times it constituted the commercial currency; a ball of yarn was worth 25 reis and a roll of cotton cloth 16\$000.

This article was exported for the first time in 1760; the quantity was 95,631 kilograms.

A kilogram and a half of herbaceous seed cotton gives half a kilogram of cotton wool and a kilogram of seed, and 73 kilograms of seed produce 81 litres of oil.

On black clayey quartzose soil, on which the *Auajá* palm (*Maximiliana regia*) grows, 500 cotton trees, cultivated by one man, generally yield 88 kilograms of cotton.

Cotton planted on cleared lands, generally produce, despite the attacks of the caterpillar, 1,909 kilograms per *quadra*, and it is not unusual to see 5,288 kilograms of Mexican cotton gathered on the same area of ground. (*)

The *sugar cane* is cultivated in Maranhão since 1662. Antonio Luiz de Barreiro was the first to plant the cane, on the banks of the Itapicurú, in the last century, its increment commenced in 1864 under the presidency of Mr. Franco de Sá, and at present if we add the values of the saccharine product consumed in the province to the amount exported, we obtain the sum of 1,000,000\$000.

The lands of Maranhão are well adapted to the culture of *rice* and if it be not now so prosperous as we might wish, time was, when the province exported 300,000 alqueires (11,016,000) over and above the home consumption, a fact due to the efforts of Captain José Vieira da Silva, who, in 1765, was the first to plant rice in the province of Maranhão.

The *coffee* from the island of St. Luiz is said to be more agreeable to the palate and more aromatic than Moca, and we cannot but lament its very limited cultivation. The valleys of the

(*) Cotton is therefore the great agricultural product of the district. It is cultivated everywhere. But the valleys which derive from the Bethlem range, a projection of the great plateau of the district of Pastos Bons which runs for more than 30 leagues parallel to the river Itapicurú, at a distance of from 2 to 5 leagues, are considered unrivalled for the culture of this plant. Lieutenant-Colonel Antonio Rodrigues Pereira Labre affirms that he obtained 420 arrobas (6,197 kilograms) of seed cotton from one *quadra*, and Dr. Carneiro 460 (6,754 kilograms) from six hectares! Now, in the opinion of Americans 500 arrobas (7,362 kilograms) of cotton are a satisfactory crop from 12 acres (a little more than one *quadra*) of their best lands; how much more ought we not to expect from ours, when they shall have received the benefit of good farming?

Mearim and Pindaré are very appropriate for the culture of coffee. *Indigo* or *caruassú* as the natives call it, might constitute a lucrative article for exportation, as well as *arrow-root*, which is so well acclimatized as to lead to the belief that it is indigenous to the province.

The culture of *indigo* dates from 1720; in quality it is superior to that of Guatemala or Mexico. It was for the first time exported, in 1761, to Lisboa.

In the province there are several kinds of *manioc*, from which are prepared the *farina secca* (dry) and *farina d'agua* (water), as also *tapioca*, *starch*, etc.

At Alcantara, *rice*, *cotton*, *manioc* and *sugar cane* are cultivated; their products are of a superior quality. *Saltpetre*, and *marble* are met with in this district.

The lands of Burity are very fertile; the products harvested there satisfy the wants of the population, and a surplus is always exported to Therezina.

At *Chapada*, *rice*, *manioc* and *sugar cane* are planted and good sugar is made.

Codó possesses an excellent soil for the cultivation of *cotton*.

Gurupy, *Brejo*, *Turiassú*, *Mearim Itapicurú*, are in the same conditions of fertility with regard to *rice*, *cotton* and *sugar cane*.

The use of modern agricultural implements and of apparatus for manufacturing good products is not yet sufficiently spread, although some planters have recognized from experience the advantages obtained from their employment.

In Maranhão there are about 1,450 stock-breeding estates, with an aggregate of 234,000 head, the average annual production being 70,000 heads.

Alcantara, *Chapada*, *Brejo*, *Carolina*, *Codó*, *Gurupy* and *Itapicurú*, possesses a vast extent of excellent prairies.

Considering the circumstances of climate and the magnificent prairies of the interior, this province might increase its revenue, if this zootechnical branch of industry were better managed, and the native sheep crossed with *negrettis* or *southdowns*, the native cattle with Indian bulls and the mares with English stallions of the best breed, adopting at the same time a system of feeding based on scientific principles.

Dairy products, prepared in this province, are not only sufficient for home consumption but are also exported to different parts of the Empire.

The cultivation of the mulberry tree and the rearing of the *bombyx mori* may be again attempted, for in the reign of Dom José, when the Marquis of Pombal was minister, Joaquim de Mello, governor of Maranhão, obtained a large quantity of silk produced at Itapicurú, which he sent to Lisbon and, being spun and woven Don José had some articles for his private use made of it.

The military colony of *S. Pedro de Alcantara* is situated on the right bank of the river Gurupy. The fertile soil here produces excellent *timber, coffee, sugar cane, cereals* and *cotton*. Some cattle are also bred on the spot.

The province of Maranhão exported during the financial year of 1873-1874, the following products :

| | | | | |
|-------------------|-----------|---------|-----------|-------|
| Rum..... | 1,502 | litres | 370 | \$000 |
| Cotton..... | 3,987,211 | kilogs. | 2,279,288 | \$000 |
| Sugar..... | 5,096,045 | " | 552,691 | \$000 |
| Coffee..... | | | | |
| Pará nuts..... | 13,000 | " | 1,380 | \$009 |
| Horse hair..... | 5,179 | " | 1,196 | \$000 |
| Hides..... | 877,584 | " | 450,889 | \$000 |
| India Rubber..... | 63,984 | " | 80,502 | \$000 |
| Timber..... | | | 37,376 | \$000 |

PIAUHY.

This province has 178,427 free inhabitants, and 25,533 slaves, occupying a vast area of 456,380 square kilometres.

Piahy to the south and east is mountainous; towards the north there are extensive plains, low and undulating. The climate is hot and damp, but in general is healthy. On some occasions, in consequence of the scarcity of rain, the heat is so intense that it dries up the low plants and causes the leaves to fall from the trees.

The only important river of Piahy is the Parnahyba, with a course of 1,600 kilometres.

In the districts of the *Capital, Amarante, Batalha* and *Barras*, *cotton* and *sugar cane* are cultivated; in other districts of the

province, *sugar cane, maize, manioc, rice, tobacco*, etc. are raised, and not only suffice for the wants of the population, but are sometimes exported.

The soil on the banks of the Parnahyba is sandy, and adapted to the culture of *tobacco, cotton, melons*, etc.

The banks of the Urussahy are fertile and yield good products.

The *sugar cane* and *rice* grow well in the low lands subject to floods.

At Paranaguá there are lands which could well be planted with *coffee*.

Oeiras is destined by nature for stock-breeding. According to the last census, there are 19,377 persons in Piauhuy employed in agricultural pursuits.

The forests of the province contain valuable timber, and if properly explored could give employment to hundreds of saw-mills.

In fact, nature and the fertile soil of Piauhuy offer to agricultural labour abundant crops and ample remuneration.

Immense meadows, shaded by clumps of splendid coconut trees, make cattle breeding the basis of the wealth of the province.

Were not Piauhuy to leave the breeding of cattle solely to nature, as Ceará also does, thus losing large profits, but would she apply the simple principles of zootechny, the results, both in quantity and quality, would not be inferior to those obtained in Europe.

Planting and stock-breeding in Piauhuy are in no way opposed to each other; fortunately the province is divided into two distinct zones, which cannot injure one another; on the contrary, from the prosperity of one will arise that of the other—if both are properly managed.

If Oeiras, Valença, Jaicoz, S. João do Piauhuy, Principe Imperial, Campo-Maior and many other places are, on account of their climate and grazing lands, adapted for the breeding of cattle, there are also the valleys of the Urussahy and of the Gugeia, and the lands on the banks of the Parnahyba inviting the agriculturist to plant, and from their extent and fertility,

promising crops large enough, not only for the wants of the province, but of many articles for exportation on a large scale.

The emigrant from Virginia, or from Kentucky for example, would find on the banks of the river Parnahyba, lands on which advantageously to cultivate the famous tobacco which he planted in his native country; those from Georgia would everywhere meet lands adapted for planting cotton, which might perhaps be as good as *sea island* if planted on some of the many islands at the mouth of the Parnahyba, especially on the large island of Paulino (administratively belonging to the province of Maranhão) which we hear has excellent soil for this kind of product. A respectable merchant of this city informs us that he saw cotton from that island of long and soft staple.

Latterly, a rural establishment was founded in this province, on the banks of the Parnahyba, comprehending *Guaratibas, Serrinhas, Algodões, Matta* and *Olho d'Agua*, estate belonging to the nation situated in the department of Nazareth. On this establishment a considerable number of former slaves of the nation emancipated by the Laws of September 28th, 1871, are being taught. Planting and cattle breeding are here rationally carried on.

The following are the agricultural products of the province exported in the year 1873—1874:

| | | |
|----------------------|---------------------|-------------|
| Cotton..... | 169,573 kilos | 88,850\$000 |
| Sugar..... | 44,554 " | 4,596\$000 |
| Hides..... | ..... | 51,393\$000 |
| Sundry products..... | ..... | 54,702\$000 |

CEARÁ.

Ceará occupies an area of 157,992 square kilometres, with a population of 729,686 souls, of which 33,960 are slaves.

The soil is partly volcanic, and partly calcareous and alluvial; it is dry and mountainous, except in the interior, where there are vast and rich forests, and the seaboard which is low and subject to floods.

The climate, hot and dry, is in general healthy; and if the temperature in the interior of the province sometimes rises in an extraordinary manner; in compensation the nights are cool

and clear. Droughts are frequent in Ceará when there are no rainfalls from March to June, when they are expected.

Agriculture would be a source of wealth, in spite of the plague of droughts, if *manioc*, *rice*, *cotton*, *sugar cane* and even *coffee* were properly treated.

At present the quantity of *manioc* planted barely supplies the wants of the population, whereas it might be an important article of exportation, as it once was when 30,000 alqueires (110,600 litres) were annually exported.

The production of *coffee* fell considerably when the *elachita* appeared, but this tree grows very well at Baturité, Uberatama, Aratanha and Maranguape, and when well prepared the grain is of superior quality.

Ceará might obtain profitable results from the extraction of *caster oil*, as the *euphorbiacea*, from which it is obtained, grows very abundantly.

Tobacco is in the same position; the leaves are as good as those of Bahia tobacco, but it has not received the increment consistent with the profits which its methodical culture would produce.

The *sugar cane* once planted lasts for many years; and at Baturité, Cariri, Serra Grande, Meruoca and Uberatama the cane is ripe for the mill within eight months from planting; the old roots re-produce many times excellent canes; if a re-plant be unavoidable, it is only necessary to burn the old plants and prepare the ground with the plough to receive the new.

Rice yields in the proportion of 224 for one.

Several qualities are cultivated: the *corolona* which requires a damp soil, the *marahin* which grows best on dry lands, as also the *chatão branco*, the *chatão vermelho*, the *chatão banudo*, the *macapá*, etc. etc.

Cotton is cultivated at Uberatama, Maranguape, Serra do Pereira, Fortaleza and Imperatriz.

India rubber abounds everywhere and principally at Aratanha, Jubaia and Aracajú.

Among the natural products which enrich Ceará several forest plants excel, such are: *piqui*, or tallow tree, the *carnaúba* palm, so celebrated for its great usefulness both in industry and

as food, and many other *medicinal plants* of great value and utility. In 1863, two million kilograms of *carnaúba* were harvested.

Crato is of recognized fertility. *Sugar cane, manioc, leguminous plants* and *coffee* grow exuberantly. *Wheat* was also cultivated with success both as to quantity and quality.

At Inhamuro the soil is well adapted for cattle breeding. There are numerous breeding estates established here.

Queixaramobim and Cachoeira have excellent pasture lands.

Baturité is said to be agricultural. *Coffee, sugar cane, leguminous plants* and cattle meet there with every condition required for their prosperity.

Uberatama, Imperatriz, S. Francisco, Aracaty, Icó, Granja and Fortaleza are in the same position.

The climate of Sobral, Meruoca, Saboeiro and Jarbim is delicious, and the soil productive. The inhabitants are principally stock breeders.

Tury-assú is exceedingly fertile.

On the shores of Itaparipeua there are good lands for the culture of *rice* and *sugar cane*; the forests are full of fine building timber and of the *vegetable oakum* called *Tauary*.

The good lands of Ceará produce on an average, 300 p. c.

A hundred plants of manioc yield 220 litres of farina.

Many estates with more or less improvements prepare sugar for consumption and exportation.

An extraordinary quantity of wax is produced by the great variety of bees met with in the province; the greatest quantity of honey is supplied by the bees called *mombuca* and *uruçu*, and the finest quality by the *mandaçaya*, the *marmaleda* the *manduri* and the *jetay* bees. The successive flowering of our plants give us a constant spring; our mild winters, the great variety of odoriferous plants in tropical regions, clearly show the advantages which we might derive from the culture of these interesting insects, which call for very little attention, as they cull for themselves the food they prefer.

Cattle breeding predominates in Ceará.

The meadows of *mimoso* and *panasco* grass give the cattle a superiority over those of Piauí, and in the opinion of Senator

Pompeu this province appears to have been destined by Providence for stock breeding.

The cattle markets of Pará, Bahia and Pernambuco are supplied by Ceará; some jerked beef and some hides are exported and *tasajo* is prepared for domestic use.

It would however be well to cross the native breeds with those from Europe best adapted for the yoke and for the butcher, and not allow breeding to go on uncontrolled and subject to all the accidents which spoil and impoverish the animals.

Besides horned cattle, mules have been bred to a considerable extent; some improvement having been made in the breed by crossing with Andalusian asses.

Cheese is also made at Ceará, it is well prepared, nutritious, of an agreeable taste and can be exported.

Free labor is almost exclusively employed in the agriculture in this province.

Ceará exported in the year 1873—1874 the following products:

| | | |
|----------------------|----------------------|----------------|
| Rum..... | 24,070 litres..... | 3,631\$800 |
| Cotton..... | 4,878,044 kilos..... | 2,608,324\$000 |
| Sugar..... | 3,082,601 “..... | 225,559\$8000 |
| Coffee..... | 967,158 “..... | 646,308\$000 |
| Horse hair..... | 3,459 “..... | 631\$800 |
| Hides..... | 1,106,672 “..... | 658,938\$000 |
| India rubber..... | 223,469 “..... | 300,207\$000 |
| Sundry products..... | | 54,240\$000 |

RIO GRANDE DO NORTE.

The area of this province comprises 87,120 square kilometres, its population numbers 220,959 free individuals and 13,484 slaves.

Its climate, hot and dry, is generally healthy; the soil is undulated, it is traversed by low mountains and watered by rivers which, with the exception of the *Pottingi* and *Ceará-mirim*, become dry in summer; it is fertile, *maize*, *rice*, *manioc*, *leguminous plants*, *sugar cane* and *cotton* are cultivated, and some of these

products are exported to the neighboring provinces, and even to Europe.

At S. Gonçalo, S. José, Goyanninha and Ceará-mirim there are 154 estates, producing nearly nine million kilograms of sugar. There are many other plantations in different parts of the province.

The soil of Capió and Ararahy is extremely productive.

On the cotton plantations the product is cleaned by means of gins. Coffee grows well on the Borborema range and cotton in the adjacent valleys.

Numberless cocoa-nut trees cover the interior of the province and even the sea-board; the forests are rich in excellent timber; medicinal plants of different kinds abound, and the carnaúba palm is so plentiful that, besides the wax consumed in the interior of the province, Mossoró and Assú alone export annually 293,800 kilograms.

The zootechnic branch of agriculture is not disregarded by the rural population and a great number of horned cattle and mules are exported as well as hides and some cochineal.

The number of cattle exported exceeds 43,000 head, of the value of 658,480\$000.

Rio Grande do Norte in the year 1873—1874 exported:

| | | |
|------------------|----------------------|--------------|
| Cotton..... | 2,007,220 kilos..... | 344,933\$000 |
| Sugar..... | 4,038,031 “..... | 335,405\$000 |
| Horse hair..... | 45,193 “..... | 22,676\$000 |
| Hides..... | 38,321 “..... | 263,400\$000 |
| Carnaúba..... | 139,000 “..... | 21,000\$000 |
| Brazil-wood..... | ..... | 68,000.\$000 |

PARAHYBA DO NORTE.

This province covers an area of 111,256 square kilometres, occupied by 341,643 free inhabitants and 27,245 slaves.

The soil is more or less mountainous and dry, traversed by several rivers and exceedingly fertile, both on the table lands where stock-breeding is carried on.

The climate is hot but bearable on account of a constant breeze and of the March rains which never fail.

The natural products of Parahyba most worthy of attention are its fine *timbers*, *Brazil wood*, *wax*, and *honey* from different kinds of bees, many *medicinal plants* and useful *textile fibres*, *oils*, *resins*, and a great variety of fruit.

The annual production of sugar averages 7,500,000 kilograms and that of cotton 8,000,000 kilograms.

Manioc, *tobacco* and *rice* are also cultivated for the consumption of the province, only a very limited quantity being exported.

Of the sugar manufactured, the brown is exported to foreign countries in the average proportion of 900,000 kilograms; the white is either consumed in the province or sent to Pernambuco.

The *sugar cane* grows well in the marshes of Arêas, Independência and Bananeiras, where the cane plantations last more than twenty years without an effort on the part of the planter.

The mountains of Barbacena and Serra-Grande produce excellent *coffee* and fine *cotton*, much esteemed in the London and Liverpool markets, where it obtains a penny more than New-Orleans.

Councillor Beaurepaire Rohan, by promoting the culture of wheat on the Teixeira mountains and at the village of Patos, proved that this cereal prospers in the province of Parahyba.

The first cotton exported from Brazil to Lisbon was grown at Parahyba do Norte.

The exports during the year 1873—1874 were as follows :

| | | |
|----------------------|-----------------|----------------|
| Cotton..... | 4,404,985 kilos | 2.162,192\$000 |
| Sugar..... | | 564,705\$000 |
| Timber..... | | 425\$000 |
| Sundry products..... | | 130\$000 |

PERNAMBUCO.

This province covers 184,592 square kilometres, and has a population of 841,539 souls, of which 92,855 are slaves.

The climate varies according to the locality; in the interior it is hot and dry, and on the seaboard it is hot and damp, but cooled by the evening breeze.

The soil is undulated ; in some places it is low and covered by extensive forests, in others traversed by low mountains and some rivers navigable by canoes.

The land in Pernambuco is exceedingly fertile and produces spontaneously excellent *building timber, Brazil wood, medicinal plants, indigenous silk, textile fibres* of great industrial value, *oils, vegetables* and delicious *fruits, etc.*

Although in the interior stock-breeding is carried on to some extent, this province may be considered as essentially agricultural, for *agriculture is to Pernambuco what blood is to the human body—the vital principle of the organism.*

Sugar cane and *cotton* are the staples of agriculture in Pernambuco.

The cotton plantations are famous for their crops, both as to quantity and quality.

In European markets, Pernambuco cotton substitutes Louisiana.

The *arboreous* and the *shrub* kinds of cotton are those most cultivated, although the *herbaceous* grows easily and rapidly in this province.

The cotton plants known by the name of *crioulo, caiana* and *quebradiço*, last twelve years, yielding a uniform and strong staple of from 34 to 39 millemetres in length, the *quebradiço* cotton wool being to seed cotton in the proportion of 7:18 and the *crioulo* in that of 7:28.

The cotton from the island of Fernando de Noronha is in no way inferior to the best *sea island* of Georgia.

It is to be hoped that the preparation of this product will improve through the beneficial influence of modern cleaning apparatus.

Although the manufacture of sugar has not attained that degree of perfection which is to be desired, nevertheless, it cannot be denied that Pernambuco sugar meets with ready sale in foreign markets, and that many improvements have been introduced in several plantations, not only with regard to the extraction of the juice but also in relation to its evaporation and to the crystallization of the sugar.

The disease of the sugar cane does not appear to have

arrested the tendency to cultivate this product, for its exportation has not sensibly diminished, and doubtless, when the culture of the cane shall have been adapted to the nature of the soil, and when the elements absorbed by the former shall be restored to the latter, the destroying parasite will disappear for lack of the proper elements for its evolution.

In Pernambuco there are upwards of 800 sugar manufacturing establishments.

The *tobacco* planted in Pernambuco is barely sufficient for the consumption of the province, although it might become a good and valuable product, as both soil and climate are well adapted for the culture of this plant; The *tobacco* of Guarahuns, for example, is said to be of excellent quality.

Coffee is in the same position. In Pernambuco there are certain localities where this product might be cultivated. Muribeca coffee, at least, is said to rival the best from other provinces of the Empire.

Maize grows exuberantly on the island of Fernando de Noronha, where one alqueire (36.72 litres) of seed, yields 400 (14,488 litres) of product.

All attempts to acclimatize the *silkworm* in the province have been fruitless; Sericulture however might produce very good results, if, instead of the delicate and exotic *bombix mori*, many species of native *saturniæ* were reared, these do not suffer from atmospheric changes, are exceedingly prolific, and give no small quantity of a continuous, elastic, and strong silky thread, which easily receives any of the usual colours employed in dyeing.

The good quality of this native silk may be inferred from the easy sale, on the Lyons market, of some parcels sent to France.

But little has been done in relation to stock-breeding. Artificial meadows are prepared only for saddle horses; the grass planted being *capim d'Angola* (Angola grass) the chief destroyer of horses.

As yet no one cultivates fodder crops for stock, by means of which the strength, the fat and the milk of cattle are increased; this however is owing to an abundance of natural meadows

where the *capim gengibre* and the *capim de roça* grow luxuriantly, and are considered excellent food for stock of all kinds.

The *Paspulus*, *Panicum*, *Chaetarea*, *Anatherum* and other grasses, abound throughout the interior of the province and are as tender as rye.¹

During the financial year 1873-1874, Pernambuco exported the following products :

| | | |
|--------------|-----------------------|----------------|
| Rum..... | 1,834,991 litros..... | 212,597\$800 |
| Cotton | 12,283,184 kilos..... | 6,035,917\$000 |
| Sugar | 80,683,282 “ | 9,580:\$000 |
| Coffee | 4,825 “ | 2,306\$000 |
| Hides | 1,676,277 “ | 775,299\$000 |
| Tobacco..... | 233 “ | 668\$000 |
| Starch..... | 450 “ | 500\$000 |
| Timber..... | ..... | 13,404\$000 |

ALAGOAS.

This province, situated between Pernambuco and Sergipe occupies an area of 88,644 square kilometres with 312,268 free inhabitants and 35,741 slaves.

Its hot and damp climate is healthy. The territory is flat, traversed by some mountain ranges and watered by rivers and lakes; it is bounded on the north by the great S. Francisco river, and, in a great measure, covered by dense forests, abounding in solid *building timbers*, *Brazil wood* and *cocoa nut trees*.

Besides these products, others are plentiful, such as *copaiba*, *benzoin*, *copal*, and many resins of different kinds, as interesting to commerce as they are useful in manufactures and in medicine.

Manioc, *maize* and *rice* grow exceedingly well; these products however are only sufficient for consumption.

The chief agricultural products are *cotton*, *tobacco*, *sugar* and *castor oil*.

Alagoas cotton is esteemed of superior quality. the tobacco is considered good and the sugar and rum rival those of Pernambuco.

At Mundahu, Guaranhuns and Itabaiana very good coffee is grown.

At S. Miguel, Cururipe, Camaragibe, Porto Calvo, Santa Luzia, Pilar and Atalaia, which are essentially sugar growing districts, there are upwards of 400 plantations which export annually, on an average, 13,000.000 kilograms of sugar in foreign markets.

Assembléa, Imperatriz, Palmeira and Penedo cultivate cotton.

This plant is mostly cultivated by free labourers, and sugar by slaves.

Great tracts of land, especially on the fertile mountains which cross Alagôas, are as yet uncultured and covered by dense forests, where wander many indigenous tribes and wild beasts.

A cotton factory has been established in the province, that of *Fernão-Velho*, occupying 33 operatives, with 1625 spindles and 40 looms, which produces 146,000 *varas* of cloth of the value of 66:200\$8000.

The following agricultural products were exported during the financial year 1873—1874:

| | | |
|---------------|-----------------|----------------|
| Cotton..... | 5,663,978 kilos | 2,809,730\$000 |
| Sugar..... | 14,920,181 " | 1,651,315\$000 |
| Hides | 604 " | 19,115\$000 |
| Timber..... | | 628\$800 |
| Sundries..... | | 594\$800 |

SERGIPE.

Sergipe covers an area of 59,242 square kilometres, and has a population of 161,307 inhabitants, including 21,495 slaves.

The climate is hot and damp, the soil generally is flat, though hilly in some places. To the west there are vast arid plains, and to the east rivers navigable by canoes, and forests rich in valuable timber.

Manioc, *cereals* and *tobacco* are cultivated in the province, and *sugar* and *cotton* on a large scale; of these latter, nearly the whole of the production of the province is exported to Bahia.

Sugar and cotton are really the most important agricultural products of Sergipe; of the latter 50 arrobas (737 kilograms)

are gathered from an area of 625 square braças (3,028 square metres).

Oil is also extracted from the seed, which, however, is generally utilized for fuel or for manure.

Sergipe not only manufactures sugar but also makes very good rum, which is exported to Rio de Janeiro, Rio Grande do Sul, and the coast of Africa.

Favored as they are by a fine climate and by a fertile soil, the inhabitants of Sergipe might cultivate on a large scale, not only *tobacco*, which does not require much capital, but also *cocoa*, so important from its nutritive properties; as well as *coffee*, the value of which is universally acknowledged; and *vanilla*, which grows profusely on their vast prairies; they might also raise *indigo* and many other valuable products.

Cereals and *manioc* are very remunerating to planters.

In this province there are upwards of 800 agricultural establishments; stock-breeders make very fair profits.

Native silk worms may also be profitably reared, for throughout the whole territory of the province, from the month of October up to December, the plants of the *Anacardiceæ* and *Anonaceæ* families are all covered with cocoons wove by our saturniæ.

In Sergipe there are 640 plantations, the machinery of, at least, 49 of them use steam power.

The fertility of the soil at Itabaiana is well known. With but little labor and small outlay, fair returns are obtained.

If the season be propitious, 400 *tarefas* or 440,000 square metres will produce 280,000 kilograms of cotton.

The *sugar cane* is planted with very good results in the rich valley of Juparanduba.

Cotinguiba is fit for every kind of culture.

N. S. das Dôres and Aquidaban are excellent for cotton.

Larangeiras exports annually important quantities of provisions.

The production of rice at the river S. Francisco is prodigious.

With regard to the agricultural importance of the province of Sergipe, one of its most distinguished Presidents express the following opinion:

"To invite immigration, it is not sufficient to be included in the deserved praise lavished on our country on account of its delicious climate, of its liberal laws; it is not sufficient that individual liberty be a fact, that religious tolerance exist; and that we look upon foreigners as brothers, and that we treat them with frankness and liberality; we must employ every means of publicity to show that Sergipe is not inferior to any of its sister provinces, and that its fertile soil will yield ample remuneration to a laborious population. If, for sugar cane, we can offer the rich valley of Japarutuba, if all Cotinguiba is fit for many products; for the culture of cotton we have 10 leagues at Itabaiana, besides other appropriate lands at Nossa Senhora das Dôres and in the district of Aquidaban.

"Of its immense area of excellent lands, Itabaiana has barely eight square leagues under cultivation, of which five are occupied exclusively with cotton and three with cereals. There the cost of harvesting one arroba (11,484 kilograms) averages 720 reis, including the expenses of planting, weeding, etc.; this price, of course, varies according to the number of kilograms gathered from one *tarefa*.

"The highest wages paid there at planting or harvest time is 800 reis per day.

"I have already mentioned its wonderful productive powers; and you may imagine the results that might be obtained by employing improved implements where the plough was never used. Slave labour in connection with free labour can no longer be an obstacle to the reception of immigrants, as it is calculated that there are not over 300 slaves, whereas upwards of 8,000 free men are employed in agriculture."

The province exported during the financial year 1873-1874, the following products:

| | | |
|---------------|----------------------|----------------|
| Rum..... | 328,199 litres..... | 42,271\$800 |
| Cotton..... | 1,428,588 kilos..... | 572,144\$800 |
| Sugar..... | 10,096,885 "..... | 1,052,207\$800 |
| Coffee..... | 58,755 "..... | 38,776\$00 |
| Hides..... | 10,231 "..... | 8,859\$00 |
| Sundries..... | ..... | 3,109\$00 |

BAHIA.

Bahia occupies an area of 646,256 square kilometres, with a population of 1,120,846 free inhabitants, and 162,295 slaves.

Its climate varies according to the locality; it is hot and damp on the coast, dry in the bay, but mitigated by frequent showers; in the interior it is dry, and on the uplands mild and cool.

The soil is mountainous, especially on the boundaries of the provinces of Minas and Goyaz; the coast is low, wooded and traversed by rivers, the interior formed of immense table lands.

As a rule, the soil of Bahia is adapted for every kind of culture; in the interior stock breeding is carried on.

Besides natural products, such as *building timber, medicinal plants, textile fibres, fruit, etc.*, the inhabitants of Bahia cultivate *sugar cane, cotton, tobacco, coffee* and *cacao*.

The culture of tobacco and coffee is increasing to such an extent as to threaten to exceed that of cotton and sugar.

Bahia *tobacco* when well prepared, may be mistaken for Havana.

Sugar is the staple product of agriculture in Bahia.

The *creoula*, or *mirim* sugar cane imported from Madeira, was planted in Bahia some three hundred years ago; in 1810 it was substituted by the *cayana*, and in the same year the first steam engine was put up at Itaparica. The *cayana* cane is being substituted by other varieties of the *saccharum officinarum* in consequence of the disease which has latterly attacked the plantations.

There are upwards of a thousand sugar manufactories in the province; some are worked according to the principles of agricultural chemistry and mechanics, the bagasse of the cane being used for fuel.

From 1839 to 1840, Bahia exported 1,980,510 kilograms of sugar; at present it sends to market 50,127,659 kilograms.

The rich *massapé* soil of Bahia is far superior to the soil of Cuba, or of the United States for sugar cane plantations.

Cane fields are known to produce for years, in spite of the inclemency of the weather and great carelessness. Roots six

years old produce numberless gigantic canes abounding in saccharine juice.

At Nazareth, Santo Amaro, Cachoeira, Inhambupe, land costs from 20\$000 to 100\$000 the square of 66 metres a side.

All the valley of the S. Francisco produces *coffee* of a roundish grain, called *male coffee*, known in the market by the name of *moca*; at S. Felipe, in the Bay, there is a variety of *coffee* of a *yellow colour*, ellipsoidal, and of 15 to 25 millimetres in its largest diameter.

The cultivation of the *coffee tree*, though limited to certain localities, attracts planters, not only on account of the quality, but also of the quantity of the product.

Several kinds of white and yellow staple *cotton* are cultivated in Bahia, and this product not only is exported, but supplies the cotton factories of the province.

The relative consumption of cotton by these mills is as follows:

| | | |
|--------------------------------|---------|--------|
| Santo Antonio do Queimado..... | 92,100 | kilos. |
| Todos os Santos..... | 222,320 | " |
| Nossa Senhora do Amparo..... | 172,250 | " |
| S. Salvador | 36,650 | " |
| Modelo..... | 80,300 | " |
| Conceição | 74,450 | " |
| Progresso..... | 45,060 | " |
| Total..... | 728,130 | |

The *cocoa* cultivated in the province is barely sufficient for home consumption; it is richer in bitter principles than that of Pará, which abounds with oil.

The culture of the *potato* might become a profitable branch of commerce, to judge by the quality of the soil and the quantity already produced. One hectare yields 60, and sometimes 100 kilograms of potatoes.

Cochineal is in the same position, for the whole of the interior at a distance of twenty leagues from Cachoeira, abounds in *cacti*.

The *rubber* extracted from the *mangaba* tree is as good as that from Pará.

The cultivation of *cotton* on a large scale, might be promoted on the lands watered by the river Contas and its affluents, as the soil, the climate, the regularity of the seasons and the nearness of the coast, all favour this product.

Sant'Amaro, Maranguape etc. have excellent land for *sugar cane*.

Itapicurú-Grande, Riachinho, Serra do Itiuba are well adapted to all sorts of culture.

The lands of Salitre, equal to those of the valley of the San Francisco river, periodically watered by rain-falls and floods, well remunerate the labour of the agriculturist.

On the counter versants of the Lençoes range, *cotton* and *cereals* produce magnificently; there are sugar cane plantations 20 years old, whose yield has in no way diminished.

Caravellas and Nazareth have fertile lands where the *coffee* tree prospers.

From Ilhéos to Belmonte, *cocoa* is cultivated.

Baependy, Rio Novo, Descalvado, S. Felix, Santo Amaro and S. Gonçalo produce excellent *tobacco*.

The Bay and Valença abound in *manioc*, and this product might be profitably cultivated on all the sandy soil existing between Ipitanga, Torres and Abrantes.

In the interior of the province stock breeding is carried on very carelessly, nevertheless and despite the droughts and the employment of means opposed to the true principles of *zootechny*, such is the fertility of the prairies that this branch of agriculture generally leaves a net profit of 25 per cent.

If the province of Bahia, with its exceedingly fertile soil, had the number of laborers which its extent requires, and if more attention were devoted to agricultural improvements, and if it were supplied with sufficient capital for the management of its industry, its production would increase immensely; it is however, pleasing to acknowledge that the system pointed out will shortly be followed, as the establishment of a *School of Agriculture* and the *Bahia Agricultural Institute* are sure forerunners of improvement and will demonstrate; "the superiority of a rational system of agriculture which meditates and resolves, produces and calculates, and dignifies the struggle for, and the conquest of credit and the splendours of wealth."

Besides the cotton factories of *S. Salvador* and *Progresso*, the following are at work: *Todos os Santos*, with 200 operatives, 4,160 spindles and 136 looms, producing 1,000,000 *varas* of cloth, and 70,000 pounds of yarn, of the value of 570,000\$000; *Nossa Senhora do Amparo*, with 90 operatives, 2,412 spindles, 48 looms, and making 600,000 *varas* of cloth, and 100,000 pounds of yarn of the value of 450,000\$000; *Santo Antonio dos Queimados*, with 90 operatives, 1,000 spindles, 30 looms, and making 320,000 *varas* of cloth, of the value of 150,000\$000; *Modello*, with 110 operatives, 1,248 spindles, 39 looms, and making 500,000 *varas* of cloth and 40,000 pounds of yarn of the value of 250,000\$000; *Conceição* with 60 operatives, 1,200 spindles, 35 looms, and making 450,000 *varas* of cloth of the value 380,000\$000.

Attempts are being made to establish mills for spinning and weaving the fibre of *ticum* and *corod*, as a substitute for foreign flax.

Colonies.—That of Cachoeira dos Ilhéos has 422 persons, who cultivate *manioc* and *sugar cane*, and make *rum*; five nuclei have been established, which, if circumstances permit, will make progress, their names are: *Muniz*, *Theodoro*, *Rio Branco*, *Carolina*, and *Comandátuba*, all in the south of the province.

The average value of land in Bahia, is as follows: 66 metres of sandy soil, 20\$000; of productive *salão*, 30\$000; of fertile *massapé* from 40\$000 to 100\$000.

Bahia exported in the financial year 1873-1874, the following products:

| | | | |
|-------------------|------------|--------|----------------|
| Rum..... | 653,179 | litres | 103,034\$000 |
| Cotton..... | 1,574,410 | kilos | 800,920\$000 |
| Sugar..... | 29,314,778 | " | 3,219,626\$000 |
| Coffee..... | 3,401,420 | " | 1,983,096\$000 |
| Hides..... | 1,319,929 | " | 859,310\$000 |
| Tobacco..... | 11,736,947 | " | 4,208,677\$000 |
| India rubber..... | 21,525 | " | 8,806\$000 |
| Timber..... | | | 391,384\$00 |

ESPIRITO SANTO.

The province of Espirito Santo occupies an area of 67,954 square kilometres, and has 82,137 inhabitants, of which 22,738 are slaves.

The climate, healthy in many places, is damp but temperate the soil is undulated, traversed by rivers, abounding in fish, and by high mountains; though exceedingly fertile, the greater part of the province is still uncultivated.

This province abounds in timber of excellent quality for building purposes and for cabinet making, of which large quantities are exported.

Only *cotton tobacco, coffee, manioc, ipecacuhana* and *cocoa* are cultivated, and these in a primitive way.

At Santa Clara and Mucury, *rice* yields 200 *alqueires* (7,344 litres) of grain for one (36,72) of seed.

At Itapemirim and at the capital the *coffee* tree is cultivated; at S. Matheus *manioc*; *coffee* being under trial on a rather large scale.

Sugar cane, coffee, beans, maize, rice, etc., are raised at Nova Almeida.

At Guaraparim the soil is fertile and produces *cereals* and other articles of value.

In 1868 agriculture produced 3,851,134 kilograms of coffee, and 225,140 kilograms of sugar; at present the exports amount to 7,882,316 kilograms of coffee and 627,665 kilograms of sugar.

The honey and wax produced by twenty varieties of indigenous bees are of excellent quality.

The province is adapted for the cultivation of the *black mulberry* or the *Italian white*. By rearing the silk worm extensively and selling the cocoons, the province might make large profits.

That sericulture may become lucrative, silk spinning ought to be introduced and encouraged and, once established, many foreign industries would come to utilize their weaving appliances.

The *silk worm* was discovered in this province during the

time of the first governors of the captaincy, and some samples were then sent to Portugal.

The province of Espirito Santo possessing many elements of wealth, will doubtless attain a high degree of prosperity when a stream of intelligent industrious immigrants shall have set in.

There are two State colonies in the province, that of *Santa Leopoldina* and that of *Rio Novo*.

The former has a population of about 5,000 souls; and of its 1,700 lots of land of 30 hectars each, 957 are occupied.

The soil is extremely fertile and the climate is healthy, all *cereals* are cultivated there.

The *coffee* tree, lately introduced, prospers admirably. In 1874 the colony produced 1,028,161 kilograms of coffee.

The colony of *Rio Novo* covers an area of 176,000 square metres, with a population of 1,535 individuals.

The climate is healthy and the soil fertile.

The colonists live in plenty and cultivate all articles of food, *coffee* and *sugar cane* and breed cattle and poultry.

The exports of the province of Espirito Santo in the financial year 1873—1874, were :

| | | | |
|-----------------|---------------|---------|----------------|
| Coffee..... | 6,351,729,246 | kilogr. | 2,532,081\$650 |
| Sugar..... | 588,623,287 | " | 144,632\$220 |
| Cotton..... | 2,546 | " | 9,983\$220 |
| Vegetable Silk. | 12 | " | 70\$000 |
| Maize..... | 1,142,121 | litres. | 64,381\$000 |
| Beans..... | 138,822 | " | 14,308\$650 |
| Rice..... | 24,430 | " | 4,913\$630 |
| Farina..... | 5,110,980 | " | 185,195\$940 |
| Castor oil.... | 1,016 | " | 379\$450 |
| Starch..... | 1,672 | " | 314\$800 |
| Rum..... | 125,034 | " | 13,490\$000 |
| Timber..... | | | 178,776\$000 |

RIO DE JANEIRO.

Including the neutral municipality (the capital of the Empire) the province of Rio de Janeiro occupies an area of 105,938 square kilometres, with a population of 682,883 free inhabitants

and 352,004 slaves. Of these 47,260 belong to the neutral municipal district.

The climate generally is temperate and healthy, cooled by the land and the sea breezes; on the uplands there are localities whose climate rivals the most agreeable of Europe.

The lands are in some places high, in others low and marshy; high mountains and large rivers cross the province in many directions. The Organ range divides the province into two parts; one, the northern, the—*uplands* embracing the richest of the agricultural districts; the other, the southern—*low lands* situated on the sea board and formed by moderately fertile plains.

The celebrated naturalist Gardner, thus describes the impression felt by a foreigner on visiting this part of Brazil:

"No region of the globe, of an equal extent, presents a greater variety of vegetable forms, than the province of Rio de Janeiro, and in this respect no other province can bear comparison.

"Situated to the north of the tropic of Capricorn, consisting chiefly of deep valleys and high mountains, some of which are 7,000 feet above the level of the sea, it necessarily offers a variety of soils and situations favorable to different kinds of plants.

"An eternal spring reigns in this delightful climate; each plant has its season, each month its flora, whence we may conclude that a long time must elapse before all these vegetable treasures can become known."

Gifted with prodigious fertility, Rio de Janeiro produces *coffee, sugar cane, tobacco*, and every variety of *cereals*, besides excellent *timber, medicinal plants* and *dyeing materials*.

The *coffee* tree constitutes the chief source of the wealth of the province, represented by 5,000 planters who mostly employ the newest processes for preparing the product.

A family may obtain 44,500 kilograms of coffee from 1,200 trees.

Three companies are established in the city of Rio de Janeiro to transact business in this product, the *Companhia União Agrícola* (Agricultural Union); the *Commercio de Café* (Com-

merce of Coffee); the *Companhia Mutua de Lavradores de Café* (Coffee Planters Mutual).

Next to *coffee* the most important article is *sugar* from the vast plantations of the district of Campos and about the river Parahyba, where the hands that once used the hoe are now accustomed to the plough; routine is giving way to systematic culture, and modern appliances are improving the quality and increasing the quantity of the products, thanks to the laudable efforts of some planters, amongst whom may be mentioned the members of the Araruama family.

The production of *rum* follows the improvements in the manufacture of *sugar*, and this article, whose preparation, sale and exportation were prohibited in 1660 by Don Pedro, is now one of the most lucrative branches of commerce and an important source of revenue.

The saccharine industry, established since Martim Affonso in 1633 imported from Madeira the cane known by the name of *crioula*, has always progressed, in spite of the drawbacks thrown in its way; this is shown by the increase in the exports which formerly averaged 80,000,000 kilograms, and now amount to 229,000,000 annually.

A *tarefa* of 1,080 square metres yields 3,525 kilograms of *sugar*, 2 pipes of *rum*, of 22 degrees, besides *molasses* and *refuse*.

In the province of Rio de Janeiro there are near 800 establishments which make *sugar* and *rum*.

Cotton, and more especially the *herbaceous*, can be cultivated with advantage in the province, the results of trials, however, did not satisfy the expectations of those who planted it. From one hectare of plant, 1,200 kilograms of seed cotton are gathered or 900 kilograms of cotton wood.

The *tea* plant was introduced into Rio de Janeiro in 1809 by rear admiral Luiz de Abreu, but it has not attained that degree of perfection which the conditions of climate and soil, and the advantage of large plantations, would seem to warrant. The whole province does not, perhaps, produce 200,000 pounds of *tea*.

Manioc is cultivated very extensively, and it is not rare for

220 square metres of land to produce 68,175 litres of farina or 53,471 kilograms of fecula.

Potatoes grow wonderfully well, 1,469 kilograms of seed yield 168 kilograms of tubers.

The culture of tobacco is commencing in Rio de Janeiro. This plant grows spontaneously in this province, and the product obtained, especially of the kind called *lanceta* is very superior. The heavy exports from the port of Rio de Janeiro and the greater part of that consumed in the capital, are from Minas Geraes, S. Paulo, Goyaz and Espirito Santo.

The mulberry tree may be advantageously cultivated in many localities of the province of Rio de Janeiro. Besides its utility, as food for the *bombyx mori*, its thick foliage makes it an ornament to our gardens.

Attempts have been made to rear the *bombyx mori* at Itaguahy and in other places, but as yet no satisfactory results have been obtained.

The Acclimatizing Society has resolved, by means of lectures, to demonstrate the advantages to be derived from this industry, and to teach how profitable results may be obtained.

There are three conditions which predispose the province of Rio de Janeiro to be essentially agricultural: the fertility of the soil, easy communication by rail or river and the great market of the capital in communication with the whole world.

Five cotton mills have been established: *Santo Aleixo*, with 150 operatives, 2,640 spindles and 52 looms, making 550,000 varas of cloth and 28,000 pounds of yarn of the value of 350,000\$000; *Santa Thereza*, with 20 operatives, 350 spindles, and making 36,000 pounds of yarn, worth 40,000\$000; *Brazil Industrial*, with 400 looms, 16 self-acting mules, 32 throstle frames, 20,000 spindles, worked by 2 turbines of 200 horse power and 1 of 50 horse power, making daily from 700 to 800 pieces of cloth, of 10 metres each, and employing 230 operatives of both sexes and various ages; *S. Pedro de Alcantara*, with 50 looms, 1,200 spindles and two self-acting mules of 700 spindles each, fed by 12 cards of 40 inches, each loom being capable of making 55 metres of cloth daily; and *Petropolitana*, at the Cascatinha, distant 6 kilometres from Petropolis; it has

108 looms for plain cloth, drills and jacars, 5 self-acting mules with 4,000 spindles, worked by a turbine of 250 horse power, which can be increased to 1,000. It can make daily 6,000 metres of cloth worth 3,000\$000, employing 200 operatives of both sexes and different ages. It has carpenters' and blacksmiths' shops to repair and makes its own machinery. The mill is surrounded by cottages and other houses for the work people.

The colony of Porto Real was established in 1874 at a distance of 4 kilometres from the Divisa station, on the 4th section of the Dom Pedro II railway. This colony covers an area of 19,806,120 square metres, divided into 111 lots of 10 hectares each, the greater part of which are on the banks of the Parahyba.

There are 216 immigrants on it; the soil is adapted for the culture of *maize, rice, potatoes, beans, manioc, coffee and sugar cane*.

An area of 16,851 square metres is under cultivation.

In the financial year 1873—1874, the province of Rio de Janeiro exported :

| | | |
|----------------------|------------------|-----------------|
| Rum..... | 950,466 litres | 137,591\$000 |
| Cotton..... | 1,284,370 kilog. | 816,946\$000 |
| Sugar..... | 1,183,690 " | 266,919\$000 |
| Coffee..... | 172,449,797 " | 96,097,494\$000 |
| Horse-hair..... | 4,,260 " | 3,302\$000 |
| Hides..... | 3,649,332 " | 1,128,144\$000 |
| Tobacco..... | 1,724,236 " | 1,043,981\$000 |
| India rubber..... | 7,589 " | 7,728\$000 |
| Mate..... | 414 " | 82\$000 |
| Wool..... | 9,198 " | 2,133\$000 |
| Timber..... | | 358,906\$000 |
| Sundry products..... | | 616,460\$000 |

S. PAULO.

The province of S. Paulo is that portion of the Empire where the beneficial influence of private enterprise, in connection with agriculture, manufactures, immigration, colonization

and public teaching has been most felt. Its territory covers 440,827 square kilometres, with a population of 837,354 souls, including 169,964 slaves.

Its climate is temperate and healthy; the soil, not very mountainous, contains several navigable rivers, and is of extraordinary fertility and well adapted for the cultivation of *cotton*, *sugar*, *wheat*, *flax*, *tobacco*, the *vine* and *various cereals*.

Its forests contain fine timber; large quantities of *horned cattle*, *pigs* and *mules* are bred on its meadows.

The culture of *cotton* in S. Paulo, even by the old routine system, leaves very large profits. The black and green seed cotton, on the S. Paulo soil, commonly produce 500 bolls, each of 5 prenciples of fine, long, white staple, the proportion between seed cotton and cotton wool being 1 per cent.

That an idea may be formed of the value of the cotton plant in S. Paulo, it is sufficient to state that 240 arrobas of (3,524 kilograms) of cotton worth 1,220\$000, may be obtained from one alqueire (36,72 litres) of seed with an outlay of 300\$000 for planting, weeding and gathering.

Sorocaba *Cotton* occupies an excellent position in European markets; three quarters of the exports from Rio de Janeiro belong to S. Paulo.

The culture of *cotton* in this province is all due to free labour; machinery of different kinds is employed in cleaning it.

Clayey, white, sandy and black soil produce very good cotton; that grown on slightly calcareous soil is of superior quality.

Of the four kinds of cotton seeds—the *big green*, the *small green*, the *white* and the *black*, the first three require 36,72 litres to 11,000 square metres.

The proportion between seed cotton and cotton wool is 7 p. c.

In 1,469 kilograms of seed cotton there are 1,028 kilograms of seed. (1)

(1.) Mr. Robert Meriweather in a letter to Mr. C. Nathan, wrote as follows respecting the province of S. Paulo :

“The climate undoubtedly is healthy; the country, neither mountainous nor altogether flat, presents an aspect which is neither one thing nor the other, at an altitude of 2,000 feet above the level of the sea.

“Water, rivers, basins, streams, springs abound for all the requirements of the planter and the manufacturer.

From 1861 to 1864, Santos exported 11,120 kilograms of *cotton*; and from 1870 to 1873, 24,905,962 kilograms.

The following are the cotton mills of the province.

1. That of Major Diogo Antonio de Barros.—Seat in S. Paulo, Constituição Street, (Miguel Carlos). Produces daily, 800 kilograms of yarn, and 2,400 metres of cloth. N. 3.

The operatives are, 13 men, 30 women, and 60 children, between 11 and 12 years of age.

"I cannot tell what the precise temperature is at the different seasons, but I assure you that it is neither so cold in winter nor so hot in summer as in the States of South Carolina or Georgia.

"Summer is the rainy season, while the winter months are dry.

"I have cotton, maize, beans and coffee. My labourers are eight slaves.

"One of them gives me annually five bales of cotton, besides his own food.

"We have a great variety of soils; the best, of a dark red colour, is very fertile and goes to a depth of many feet; the second is brown; and the third light brown.

"All of them produce very well, and on being cultivated, vary very little as to crops.

"When well cultivated, one acre produces from 1,500 to 1,800 pounds of seed cotton, and more or less 50 bushels of maize. Sweet potatoes are always producing in great abundance; sugar, 2,000 pounds, and coffee 1,500 pounds.

"The proper seasons for harvesting are nearly the same as in South Carolina or Georgia.

"Here a man cannot plough as much as there, because vegetation is continuous all the year round, whilst there the frost keeps down the grass, etc., for many months; this is the only difference in the farming of the two countries.

"There is no grass or weed so difficult to pluck as to prevent the land being cultivated for fifty years successively.

"The principal fruits are oranges, lemons, pine-apples and grapes; we also have peaches and other fruits of temperate climes.

"Vegetables of all kinds abound.

"White men, both Brazilians and Americans, work constantly in the sun, without suffering at all.

"We have good pastures all the year round for the cattle, which breed regularly. Sows and sucking pigs cost a dollar a head; oxen from 40 to 60 dollars a pair; mules and horses from 50 to 100 dollars a head.

"As we have good pastures the keep of horned cattle, mules, horses, etc., is not expensive; pigs require a little maize now and then.

"We do use stables.

"Poultry breed very well, and are worth from 8 to 20 cents, according to size.

"In conclusion, I am glad to be able to say, that after two years experience, my family and myself consider ourselves happy and are content; living in every respect as well as in the United States, and that our Brazilian neighbours, both ladies and gentlemen, are as good to us as those we left in South Carolina or Georgia."

"They are well educated, good mannered, amiable and generous, willing to do good when possible, and treat us with respect and deference."

2. S. Luiz.—Seat at Itú. American machinery, capable of producing 1,365 metres of coarse cloth daily, 24 looms. Capital, 100,000\$000; net profits about 50 per cent. It belongs to Messrs. Anhaia & Angelo.

3. Industrial Jundiacyano.—Capital, 140,000,000; statutes approved by decree n. 5, 731, of August 27th, 1874. It is not yet started.

4. Salto.—Seat at the falls of Itú. Fifty looms, 18 carding engines, and 1,600 spindles.

Engines from Platt Brothers, of Manchester. Can employ 100 operatives. The engines are being put up and will be worked by water power.

5. Cachoeira do Votuzantim.—On the Sorocaba river. Capital, 100,000\$000. Belongs to a company.

6. Santo Antonio.—Seat at S. José of Parahyba. Inaugurated on February 9, 1875. Twenty-five looms, worked by a turbine of 50 horse power. Belongs to a planter named José Arouca.

It would be unjust not to notice here the cotton mill located near the Piracicaba falls.

We must therefore mention :

7. That of Luiz Vicente de Souza Queiroz.—Seat at the falls, near the city of Constituição; 50 looms of Platt Brothers, of Manchester. Can make 1,000 metres of cloth daily, and can employ 60 women, some men and children. The machinery is now being set up and will be worked by a turbine wheel of 50 horse power.

In the province of S. Paulo, there are now but few coffee planters unacquainted with the successful application of modern machinery to the preparation of the grain in order to increase its value in foreign markets.

Until lately, S. Paulo *coffee* was not distinguished for its good quality; on the contrary, it had rather the reputation of being imperfectly prepared; now, however, if it do not equal that of the province of Rio de Janeiro, it has, at least, acquired a much better name in consuming markets.

The production of coffee is increasing wonderfully in the province of S. Paulo. From 1861, to 1864, the exports were

59,362,356 kilograms, having increased from 1871 to 1873, to 93,733,613 kilograms.

The following places supply the coffee exported from Santos :

| | |
|---------------------|--------------------|
| Atibaia..... | 300,000 kilograms. |
| Arêas | 900,000 “ |
| Ariró | 3,757,000 “ |
| Belém..... | 4,500,000 “ |
| Botucatu | 109,800 “ |
| Bananal | 4,500,000 “ |
| Bragança..... | 1,500,000 “ |
| Guaratinguetá | 4,407,000 “ |
| Limeira | 7,500,000 “ |
| Pirassununga | 2,250 “ |
| Queluz | 1,800,000 “ |
| Rio do Braço..... | 3,000,000 “ |
| Santa Izabel..... | 270,000 “ |
| S. Roque..... | 45,000 kilograms. |
| Silveiras | 1,500,000 “ |
| Barreiro | 3,750,000 “ |
| Tieté | 650,000 “ |

At Limeira there are 40 coffee hullers worked by water and steam power, and 59 at Campinas.

S. Paulo was the first province that used the plough in the cultivation of the coffee tree, an implement now in the hands of the free labourers mostly employed in the plantations.

From 1,000 coffee trees, 1,468 kilograms of prepared grain are taken : and it is not rare to see 4,407 kilograms gathered from that number of trees.

One labourer can attend to 1,200 trees.

The production of *tea* is not insignificant, for the exports alone amount to about 200,000 pounds.

S. Paulo tea cannot yet compete with that from China. This, however, ought not to discourage its culture, which was introduced into the province by the worthy Lieutenant-Colonel José Aroux Toledo Rendon.

Java spent twenty-seven years, though under more favour-

able circumstances than Brazil, in the cultivation of tea before its product could rival that from China.

The culture of *wheat* and *flax* can and ought to be continued in the province; to prevent blight, which attacked the first crops, it is only necessary to change the seed or to employ a solution of vitriol, which in no way injures the product.

Rice is abundantly cultivated at Iguape, 36,70 litres of seed yield 11,000 of grain and 140 litres of rice in the husk, produce 73 litres of clean grain.

The soil of Iguape is excellent for *cocoa* and *India rubber*. One acre, or 42 ares of *manioc*, produces 3,636 litres of *farina*, or 2,481 of *rice*, or 1,500 kilograms of *cotton*, or 1,820 litres of *maize*.

Beans yield in the proportion of 80 for one; *maize* in that of 140 for one; from the former two, and from the latter three crops are obtained yearly.

Araraquara is admirably fertile, and especially adapted for the culture of the *sugar cane*.

Itapetininga produces good *wheat*.

From Tieté and Paranapanema as far as Botucatú the soil is excellent for *cotton*, *rice*, *cereals* and *stock-breeding*.

Itú is an admirable place for agricultural products.

The American, Portuguese, Spanish and French *vines* are being spread all over the province on a scale sufficiently large for the manufacture of wines, which much resemble common Bordeaux.

According to the latest information offered to the Commissioners of the Exhibition by agriculturists of the province of S. Paulo, there are 90,000 healthy, well-grown vines in the province. There are 1,400 varieties of the *vitis vinifera* acclimated in S. Paulo. From America they have the *Isabella*, the *Catauba*, the *Concord*, the *Diana*, the *Union Village* (*vitis labrusca*), the *Lenoir* (*vitis estivalis*), the *Delaware* (hybrid) and the *Scapernang* (*vitis vulpina*.)

From Europe, they cultivate the *Verdelhão*, the *Tincta*, the *Alcarilhão* and the *Alicante*, all from Portugal; as also the *Muscatel* (from Fontainebleau), the *White Chasselas*, the *Red Chasselas*, the *Aramon* and the *Lenneante*, from France.

About 800 pipes of wine are made yearly in S. Paulo, and sold from 130\$000 to 400\$000 the pipe, 1,000 vines produce 10 pipes, leaving a net profit of 430\$000 for each plantation.

Modern processes are now being tried for the manufacture of wines.

Stock-breeding in S. Paulo constitutes an important branch of commerce, principally at Sorocaba, where a fair is held annually, at which are sold large quantities of horses, mules, horned cattle and pigs, bred in the provinces of S. Paulo, Parana and Rio-Grande do Sul.

S. Paulo is, of all the provinces of Brazil, that in which the partnership system with colonists has produced the best results.

The progress of S. Paulo in agricultural industry is not merely due to the fertility of the soil and to the salubrity of its climate; much is also owing to private enterprise which has established means of communication, improvements in agriculture, and introduced a number of free and intelligent labourers, who, commencing as simple colonists, have gradually been transformed into small independent land proprietors.

The following statistical table, due to Senator Godoy, shows the progressive increase of the agriculture of the province of S. Paulo :

| | 1859 a 62 | 1862 a 65 | 1865 a 68 | 1868 a 71 | 1871 a 74 | — |
|-----------|------------|------------|------------|-------------|-------------|--------|
| Coffee... | 62,815,240 | 63,090,684 | 68,956,489 | 166,208,362 | 189,723,684 | kilog. |
| Cotton.. | ..... | 122,205 | 14,538,647 | 18,794,180 | 28,774,118 | " |
| Bacon .. | 2,321,503 | 877,256 | 1,122,300 | 733,886 | 1,538,077 | " |
| Tobacco | 364,607 | 429,399 | 800,103 | 927,296 | 2,428,077 | " |
| Sundries | ..... | ..... | ..... | ..... | ..... | ..... |

PROGRESSIVE INCREMENT.

| | |
|--|-------------|
| Between the first and second triennial period..... | 6,18 p. c. |
| Between the second and third triennial period..... | 45,76 p. c. |
| Between the third and fourth triennial period..... | 48,38 p. c. |
| Between the fourth and fifth triennial period..... | 33,96 p. c. |

Forty-one private colonies have been established in the province by 35 planters.

Of those existing, the most deserving of notice are the following: *Cananea*—the soil of this colony is occupied by 457 individuals, and produces *cereals*, *tobacco* and *sugar cane*. Water is abundant, and the soil is extremely fertile; *maize* yields 200 for one, and *rice* and *beans* 60 for one.

At Xiririca there are excellent lands for the *coffee tree*, which often yields fruit when only two years old.

Pdo d'Alho: soil fertile, and adapted for the culture of coffee.

S. Jeronymo: with 463 individuals who work in partnership; this colony produces a considerable quantity of coffee. Stock-breeding and poultry rearing is also carried on.

Boa-Vista: with 143 individuals.

S. Lourenço: with 750 “

Cafeeiras: with 120 individuals.

Morro-Azul: with 104. “

Nova Louza: with 111. “

All produce coffee and other articles of food.

In the first three, the colonists receive 500 reis for 36,72 litres of coffee gathered, in the berry. At *Nova Louza* they receive 14\$000 monthly, during the first year, and 18\$000 during the second; women receive 800 reis, food being found by the owner.

There are besides, the following colonies: *Moreira de Barros*, consisting of 28 families with 128 persons, employed in the culture of the coffee tree; and the three colonial nuclei lately established by the Baron of Souza Queiroz.

The military colonies are: *Itapura* and *Avanhandava*, abounding in *fish*, *timber*, *cereals*, *tobacco*, *cotton* and *potatoes*.

The following agricultural products were exported by the province of S. Paulo from July 1874 to July 1875.

| | |
|--------------------|-----------------------|
| Coffee..... | 62,173,385 kilograms. |
| Cotton | 9,897,482 “ |
| Tobacco..... | 514,139 “ |
| Tobacco juice..... | 16,255 “ |
| Bacon..... | 770,319 “ |

| | | |
|------------------|---------------|------------------|
| Sugar | 57,937 | " |
| Mate | 28,846 | " |
| Rice | 3,016,498 | litres. |
| Maize | 459,834 | " |
| Beans | 61,422 | " |
| Farina | 17,854 | " |
| Rum | 84,559 | " |
| Wine | 272 | " |
| Eggs | 2,559 | dozen. |
| Poultry | 38,036 | heads. |
| Cattle | 12,173 | " |
| Fruit | 50,700 or 683 | b'ches |
| Cigarettes | 293,000 | packages. |
| Sundries | } | 18,943 packages. |
| | | 56,646 litres. |

PARANA.

The province of Paraná extends over an area of 335,412 square kilometres, with a population of 64,810 individuals, of which 8,506 are slaves.

The climate at the sea board is hot and damp; on the high lands beyond the *serra do mar* (sea range), the temperature is agreeable, the air pure and bracing.

The territory has but few mountains, and spreads over vast prairies, fertilized by several rivers, some of them navigable the soil in many places is covered by dense forests.

This blessed portion of the Brazilian territory, where the immigrant does not incur the danger of acclimation, where the exotic plants flourish as on their native soil, is well adapted to stock breeding and agriculture, both meridional and tropical.

Here the *walnut tree*, the *olive tree*, *rye*, *wheat*, *barley*, *rice*, *potatoes*, *tea*, *coffee*, *tobacco*, *cotton*, *maize*, *vanilla*, and the *sugar cane* are met with, as also hundreds of other exotic and indigenous plants, which form the basis of the wealth of the province, and which will increase when greater expansion shall be given to stock breeding, for which the climate and the prairies of Paraná are so well fitted.

Paraná produces magnificent building timber in addition to

its immense pine forests, which yield the delicious and nutritive pine-tops, and wood superior to the European pine.

The fir tree of Paraná attains a height of 34 metres and a diameter of 1 m. 75.

Rye and *wheat* produce 20 for one; and on good soil, wheat yields one-fourth more than rye, which in Europe yields one eighth less than wheat. Wheat abounds on the table lands of Guarapuava and on the Coritiba range.

Barley yields 40 for 1; the weight of an alqueire (36.27 litres) varying from 33 to 35 kilograms.

There are more than 30 varieties of *maize*; this cereal is largely cultivated, as it forms the base of the bread consumed in the province. It yields 100 for one.

Beans average 60 for one; and sometimes as much as 2,000 alqueires (72,540 litres) are exported, this being a surplus beyond the home consumption. The *feijão de lastro* (ballast bean) produces 200 for one. At Paraná, 58 varieties of beans are known, and this product is of great use to poor people and to commerce when food is scarce.

From one hectare of land 40 hectolitres of barley are obtained with 32.67 litres of seed.

The best lands of Belgium produce 22; at Paraná they yield 25, 30, 40 and more for one; and by adopting the native system of culture as much as 200, 300, 400 and even more may be obtained for every grain of maize planted (*Dr. Muricy*.)

Tilling and planting go on from August to November, and harvesting from January to May.

Cotton grows so luxuriantly in Paraná that from 341 square metres of land 2,938 kilograms of cotton are gathered, many trees bearing 150 pods.

The *cotton* of the province, which is usually grown from the black, hard seed, has a long, white, strong and silky staple.

Flax grows better than in Europe, and the fibre is longer.

Enormous quantities of *pine-tops* are gathered in the vast forests of the proud *araucariæ*; they are very pleasant eating, rich in nutritive elements, fit for the food of the natives and for exportation.

Mate, mostly of superior quality, abounds in Paraná and con-

stitutes an important item of the exports. There are various species of this product, the chief of which are *caanini* and the *palos* or *cuauna*, which is bitter when wild.

An equal weight of *mate* contains the same principles and in the same proportion as tea, and more than coffee.

From *mate* an agreeable liquor is prepared, as also very good rum.

The Paraná tea, so much admired at the Paris International Exhibition, is nearly forgotten, although the soil is good. Its culture would be very advantageous for the province and might become a source of wealth.

The province might obtain large profits from its numberless *textile fibres*, as also from the methodical cultivation of *flax*, on a larger scale.

Hay is made at Paraná from the *papuan*, the *pt de gallinha* (hen's foot) and other *grasses* possessing nutritive qualities. At Coritiba, especially, many kinds of fodder crops are cultivated which resist the winter cold.

In the district of Coritiba there are excellent lands for the cultivation of *European cereals*.

The soil along the left bank of the Nhundiaquara is all suited for the cultivation of *coffee*, *cotton* and *sugar cane*.

At Porto de Cima, Morretes and Antonina, there are several establishments for preparing *herva mate*.

At Palmeiras great quantities of *horned cattle* are bred; several kinds of *cereals* are cultivated, and some coarse *woolen cloth* is made; there are excellent pastures for sheep.

At Tibagy *rice* grows wonderfully, and the woods abound in *vanilla* and *ipecacuanha*.

Cotton is cultivated on the fertile soil of Cæstro.

All the valley of the Paranapanema is of admirable fertility.

Barreiros exports 9,000,000 kilograms of prepared *mate*, and Antonina 5,000,000. The plough is coming into general use and proving the value of agricultural implements by the improvements obtained in the culture of the soil.

The temperature at the lands of the district of Guarapuava, which comprehend many other prairies, is lower than at Campos Geraes, or on the high lands of Coritiba, as not only the

hoar frost is often seen there but even snow sometimes. European cereals find there a very appropriate climate. Frost and snow are never seen on the banks of the great rivers which cross the district of Guarapuava. On those of the Iguassu the sugar cane and some other intertropical plants are now cultivated.

These great variations and these different zones of temperature and vegetation are observed in all the districts of the high lands.

In all of them, there are not only excellent arable lands, but good natural pastures, for in this municipality, in that of S. José dos Pinheiros and at Principe or Lapa, there are many vast prairies, where large quantities of horned cattle are bred.

Besides these fertile lands, adapted to the culture of all kinds of produce, Paraná possesses the great *Campos Gerais* covered with prairies superior to the artificial meadows of Europe.

On account of the temperate climate and of the fertility of the soil of these fields, stock breeding there does not require the attention and the care bestowed on it in other countries. A few men suffice for the management of a breeding estate, and much of the work, such as galloping on horse-back, throwing the *laço*, and collecting or gathering the cattle, are mere amusements. These gatherings (*fazer rodeio*) take place at fixed dates, and certain places, to give salt to the cattle, mark the calves and colts and to castrate them. Besides these there are only the extraordinary gatherings to cure the sick animals.

The prairies are partially burnt to renew the grass, so that the live stock finds, during a great part of the year, the new tender grass which grows after firing. The number of these firings is in proportion to the extent of each prairie, but no part of the meadow is burnt till the grass is at least a year old.

The annual produce from the cows, averages one-third of these and sometimes a half, according to the care they receive. That of the mares is a little less.

The proprietors of Campos Gerais, all stock breeders, cultivate the soil merely to harvest what they require for domestic consumption.

It is, however, certain that the climate of that enchanting

region invites the culture of many varieties of plants, in different localities (1).

Whilst the culture of foreign cereals, of the vine and other fruit of temperate climate, as well as other industries, such as *siriculture* and *apiculture*, may be extended in the temperate regions of the province; the production of tropical products, such as *cotton*, *sugar cane* and *tobacco* may, in the warm climates, go beyond the limits of mere trials, or secondary cultures, and become important sources of wealth to the province.

In the basin of the Piquery, there are extensive *catanduvás* with excellent water pastures.

Paraná maintains with S. Paulo and the north of the Empire an important commerce in *horned cattle*, *horses* and *mules*.

The breeding of *merino sheep*, introduced by Mr. Marcondes de Oliveira, when Minister of Agriculture, sensibly progresses; attempts are now being made to acclimatize the *alpaca* and *Angora goats*, for which the climate and the extensive plains of Campos Geraes, covered with fine grass and shaded by magnificent pine trees, are well adapted.

The *creciuma*, the *putinga*, the *corod*, the *taquaris* and other qualities of grass abound more or less throughout all the interior of the province.

Apiculture might prosper in the province of Paraná and would be profitable to those who tried it, for a small hive would yield regularly from 6 to 8 quarts of honey and 4 litres of wax, that is, a yearly net profit of 5\$000.

(1) Mr. Lloyd, member of the English Institute of Civil Engineers, writes as follows:

"The broad expanse of the Campos Geraes is still undisturbed by the plough, and is singularly destitute of even cattle; and beyond these attractive plains, stretches to a point far beyond the Paraná River, and to within a short distance of the commencement of the projected railway communication in Matto-Grosso, an almost unknown and impenetrable region of virgin forest, encumbering tracts of land of inestimable value to the agriculturist, but now idle and almost valueless."

With reference to the establishment of the railroad, which is to unite Matto-Grosso to Paraná, the same Engineer says: "If fertility of soil, geniality of climate, abundance of water of the purest description, can convey assurances of future wealth and well-being, if a country rejoicing in all the varied beauties of mountains and plains, of noble rivers, and majestic forests fail to invite settlers, it is obvious that the reasons must be sought, not in the country itself, but in the absence of adequate means for the disposal of the results of labour, etc., etc."

In this province there are several colonies, the most important of which are :

Assunguy, founded in 1860; it has at present, 1,345 persons, occupying an area of 88,572,000 square metres.

The climate is salubrious; the soil productive of *sugar cane*, *maize*, *beans* and various kinds of *amylaceous tubers*. The *vine* is cultivated and promises well. Agriculture is there assisted by 27 sugar mills, 8 distilleries and 64 *monjolos* (rough water mills).

There is a Roman Catholic Church, and a Protetant one is being built.

Argelina, established in 1848 by Algerine colonists, at a distance of 6 kilometres from Coritiba, has an area of 726,000 square metres.

Abranches, founded two years since in the neighborhood of Coritiba, with an area of 412,000 square metres, promises a prosperous future, due to the nature of the soil and the activity of the Poles who occupy it.

S. Venancio, commenced in 1872, near the capital, invites immigration by its advantageous position and the variety of its products.

Rio-Negro. This colony produces exuberantly all *cereals*, *tobacco*, *etc.*; makes excellent *hay*, and rears *cattle*, improving the breeds by crossings

The *Therezina* colony, situated on the banks of the Ivahy, produces *cane*, *coffee*, *tobacco*, *cotton*, *salt* and *starch*, *etc.*

Superaguay, founded in 1852. This colony has good lands for the culture of *coffee*, *tobacco*, *sugar cane*, *rice*, *etc.*

Itajahy, established August 4th, 1860, has an area of 653,400,000 square metres, of which 8,000 are under cultivation; the greater part of the inhabitants are Germans.

The products are *tobacco*, *cotton*, *sugar*, *cane*, *rice*, *timber*, *etc.*

It has 20 saw mills, 31 sugar mills, and 22 farina mills.

The province of Paraná, in the financial year 1873—1874, exported :

| | | |
|----------------|--------------------|----------------|
| Sugar | 9,310 kilos | 1,136\$000 |
| Tobacco | 1,590 " | 949\$000 |
| Mate | 12,359,640 " | 2,156,118\$000 |
| Timber ..... | ..... | 9,784\$000 |
| Sundries ..... | ..... | 2,682\$000 |

There are 37 sugar mills, 30 manioc mills, and 20 saw mills, worked by water power.

Blumenau. This colony was founded in 1852 on an area of 602,720 hectares, of which 7,180 are under culture.

Cereals, potatoes, cotton, coffee, sugar cane, tobacco, arrow-root, timber, dairy products, etc., are the agricultural products of this colony.

Angelina. A colony established December 10th, 1860, contains 1,327 persons, and possesses an area of 191,464,000 square metres; the climate is healthy and the soil fertile.

| | |
|--------------------|-----------------------|
| 36 litres of maize | produce 4,500 litres. |
| 36 " " potatoes | " 360 " |
| 54 " " beans | " 648 " |
| 18 " " rice | " 540 " |

From 2,200 square metres, with 625 manioc plants, 1,411 litres of *farina* are obtained.

Santa Theresa. A military colony, has an agreeable climate and produces *sugar cane, tobacco* and *cereals*; *cattle* of different kinds abound.

The province in the financial 1873—1874 exported :

| | | |
|---------------|---------------------|-------------|
| Rum..... | 111,478 litres..... | 11,060\$000 |
| Sugar..... | 96,596kilos..... | 12,465\$000 |
| Coffee..... | 18,388 "..... | 11,649\$000 |
| Mate..... | 5,529 "..... | 915\$000 |
| Timber..... | ..... | 41,756\$000 |
| Sundries..... | ..... | 318\$000 |

RIO GRANDE DO SUL.

The province of Rio Grande do Sul covers an area of 358,440 kilometres, with a population of 189,490 free inhabitants and 35,188 slaves.

The climate, temperate and healthy, resembles that of southern Europe; in some localities, near the Uruguayan Republic, it freezes.

The soil is mountainous, except to the north and in the

centre of the province, where immense prairies exist, crossed by numerous rivers, and containing some lakes.

Although the chief industry of Rio Grande do Sul is breeding *horned cattle* and *horses*, and preparing *jerked beef*, nevertheless, *rice*, *barley*, *wheat*, *maize*, *flax* and the *vine* grow very well.

On the range which winds between the river Cahy and the Cadêa stream, *wheat*, *rye*, *barley* and extensive *herudes* (plantations of *herva mate*) prosper.

The cultivation of *wheat*, which was at one time so flourishing that the province in 1817 exported 300,000 alqueires (10,881 kilolitres), commences anew, especially of Spanish wheat, which the blight does not attack and which produces 60 for one.

At Piratinim, Encruzilhada, Caçapava, and Cangussú, wheat generally yields 30 for one, whereas in France it averages from 5 to 15 for one.

The crops of *rye* are in the proportion of 60 for one of seed; the *alqueire* weighs 60 pounds (30 kilograms); 150 bags of *maize* are gathered from 1½ *alqueire* (14k.684) of seed or 18.13 litres.

From 1,000 *tobacco* plants an *arroba* of leaves of superior quality are taken, other crops being gathered later. The *tobacco* leaf is broad, fine, resisting, equally colored, and of excellent aroma, resembling Virginia.

From 100 cotton trees an *arroba* (14k.684) of cotton is taken, the proportion being one-third of cotton wool to two-thirds of seed; this product acquires the qualities of *Sea Island*, when the two varieties are planted together.

Manioc is extensively cultivated, not only for the manufacture of *farina* but also for the extraction of *starch*.

It may be said that the flour made from the excellent cereals produced in Rio Grande, satisfies the requirements of this province, which may shortly become the granary of South America, especially if, with regard to wheat, the cultivation of the Hungarian, the African, and that from Trieste, be extended, as these qualities are richer in gluten.

Coffee can, on some soils of Rio Grande, be advantageously cultivated, as may be seen in the district of Santo Antonio.

The culture of flax has fallen off considerably, owing to ignorance as to the best method of preparing it; its cultivation however commences again to increase under the influence of new and easy processes lately invented for the extraction of the fibre.

Mate abounds in S. Jeronymo, at Missões and on the uplands; the exports of the province already average 5,960,000 kilograms annually, which, added to the consumption in the interior, raises the value of this agricultural product to 1,500,000\$000.

The north of the province exports to the Oriental and Argentine Republics, nearly 3,000,000 kilograms of *herva mate*.

In the opinion of Dr. Ewbank da Camara, this region will reveal great productive powers as soon as the beneficial influence of colonization, properly directed, shall be felt.

And, truly, of all the provinces of the Empire, S. Pedro do Rio Grande do Sul is the one in which European colonists have prospered the best, especially Germans, who prefer agricultural pursuits, and who will meet with very fertile lands to the north of the rivers Jacuhy and Ibicuhy.

The cultivation of *hops* is spreading, and the results are important, as nearly all the beer brewed in Rio Grande is with the native article.

The culture of the *mulberry tree* is acquiring large proportions, and as a consequence, also the rearing of the *bombyx mori*, whose beautiful white and yellow cocoons are now exported, besides large quantities of eggs.

The cocoons obtained by Schutel were much admired at the Roveredo Bacologic Exhibition, and 80 francs a pound was the value put upon them.

The *vine* is in the same position, and wine making is extending; if the wines are not of superior quality, they are at least better and purer than many imported. The island of Marinheiros and the colonies make annually over 1,000 pipes of wine, mostly from the American grape.

At the Upper Uruguay, *coffee*, *hops*, and the *vine* may be advantageously raised.

The culture of *cotton* could be carried on under very favor-

able conditions between Itapoan (as far as Porto Alegre) and the isthmus which separates Lagoa dos Patos from the sea.

As to the natural products of the soil, large forests full of excellent timber, besides numerous species of medicinal plants exist on the banks of the river.

The climate of the Missões, says Bompland, is nearly uniform; on one zone of land *wheat* and *barley* may be cultivated with success; on another *sugar cane*, *indigo*, etc. Maize (*zea-mais*), manioc (*Jatropha manhiot*), sweet potatoes (*Convolvulus batata*) pea nuts (*Arachis hypogea*), cotton (*Gossipium herbaceum*), melons (*Cucurbita melo*) potatoes (*Solanum tuberosum*) beans (*Phaseolus vulgaris*), etc., may be raised everywhere.

It is to be supposed that tea and coffee would produce admirably and would be of great utility to agriculture.

Although the country contains numerous prairies, it may not be idle to mention, that experience has proved that lucern (*Medicago sativa*), Guinea grass and other fodder crops produce marvelously.

It would be well to plant artificial meadows with these and many other grasses of easy culture.

The red soil of Missões is well adapted for the culture of vegetables and of the leguminous plants we receive from Europe.

The culture of rice (*Oriza*) is not less lucrative than that of tobacco.

The indigenous fruit trees are innumerable and deserving of careful study.

Unfortunately, as yet, no one has paid attention to these plants which may become so useful.

The inhabitants of Missões care only for the fruit of exotic plants, amongst which the orange tree occupies the first place; it is that which yields most fruit and pays best. In general, every species of *citri*, which belong to this natural order, produce abundantly.

Next to the *citri*, come the different species of peach trees (*Acuanteum persica*) which produce great quantities of valuable fruit.

Then follows the vine (*Vitis vinifera*), the pear tree (*Pyrus communis*), the apple tree (*Pyrus necelus*), the almond tree

(*Amygdalus communis*), the fig tree (*Ficus carica*), the quince tree (*Sydonia vulgaris*), etc.

To the differences of altitude, is due the variation in temperature at the ex colony of S. Leopoldo, and hence the facility for cultivating different products, such as *cereals, tobacco, sugar cane, manioc, flax*, etc.

The rearing of *poultry* and the breeding of *cattle* and *sheep* furnish copious elements for the dairy and for manufactures.

The *bee* and the *silkworm* thrive marvelously, producing excellent honey, wax and cocoons.

The *vine, barley*, and *hops* are extensively cultivated, and from these very fair alcoholic products are prepared.

Some improvement has been made in the breed of sheep by crossings with *merinoes* and *negrettis*.

The breeding of *horned cattle* is the chief branch of the industry of the province, and employs a great portion of the rural population. The produce continues to increase, but is losing in quality for want of judicial selection and of a proper system of feeding adapted to the ends to which the animal is destined.

The *horse* is suffering from the same causes, as breeding is left entirely to purely natural influences. Rio Grande horses, as a rule, are not so strong as those from the north of the Empire.

The produce of the dairy is hardly sufficient to supply the wants of the province.

Besides some small cotton factories, the province has a mill which spins and weaves wood, and which has manufactured some interesting samples, using the wool from native sheep, which are pretty numerous in the province.

Not a few colonial nuclei are scattered over the province, the following are the most interesting :

Santa Maria da Soledade, with 2,034 inhabitants.

Cereals are cultivated, and amongst these, *wheat* and *rye*; 154 ploughs are at work, and sheep breeding is being introduced.

Santo Angelo has 1,962 inhabitants, of whom 254 are employed in the cultivation of *cereals, potatoes, sugar cane* and *tobacco*, the exports averaging 1,490,000 kilograms.

New Petropolis; of the 1,284 persons which constitute the colony, a great portion raise *maize, beans, rye, wheat, barley, etc.*

Monte Alverne is a little colony inhabited by 561 individuals. The soil is very fertile, and produces *sugar cane, tobacco* and *cereals*.

Count d'Eu; the soil is extremely fertile, but the colony has only 74 persons.

Santa Cruz; in this colony there are nearly 7,000 persons. It produces exuberantly all kinds of *cereals, honey, wax, tobacco*; *cattle* are also bred; *tobacco* is its chief article of exportation, which at present amounts to 1,028,272 kilograms of the value of 388,000\$000.

The following are the agricultural products of the province of Rio Grande, exported in the financial year 1873—1874 :

| | | |
|-------------------|---------------------|----------------|
| Rum | 83,491 litros | 24,273\$000 |
| Sugar | 9,300 kilos | 2,622\$000 |
| Jerked beef | 23,860,636 " | \$ |
| Horse hair | 571,151 " | 483,785\$000 |
| Hides | 11,906,627 " | 7,382,109\$000 |
| Mate | 1,055,160 " | 169,249\$000 |
| Tobacco | 637,399 " | 236,688\$000 |
| Wool | 788,518 " | 300,504\$000 |
| Timber ..... | ..... | 50,012\$000 |
| Sundries ..... | ..... | 625,292\$000 |

MINAS-GERAES.

This vast province has an area of 871,200 square kilometres, with a population of 2,009,023 inhabitants, of whom 235,111 are slaves.

The climate is healthy, and in some places cold. The soil, extremely mountainous, is crossed by numerous rivers, and is fit for every kind of culture.

Its natural products are medicinal plants, timber and resins.

Cotton, coffee, sugar cane, the vine, tobacco, manioc, maize, vanilla, palma christi, etc., are cultivated.

The *sugar* and the *rum* made is all consumed in the province.

Minas *cotton* is of long, equal, fine, resisting and brilliant staple, and nearly all is sent to Rio de Janeiro already made into cloth.

The *tobacco* is of excellent quality; that prepared by Daniel by far excels every other. The province produces 1,600,000 kilograms.

At Lavras not only the *coffee* is of superior quality, but *tobacco*, *sugar cane* and *cotton* pay the agriculturist well.

At Lagoa Dourada, in the district of S. José d'El-Rei, there are more than ten *sugar mills* and *distilleries* using iron cylinders. This district exports yearly 8,000 cheeses and some handsome cotton cloths; all articles of food are easily raised, *wheat*, superior *manioc*, *coffee*, *rice*, etc.

At S. João d'El-Rei there are some parishes, such as Bom Successo, which contain 60 estates, with 9,834 alqueires of land under cultivation and 16,000 head of *horned cattle*, *sheep*, *pigs*, *horses* and *mules*.

At Queluz there are 300 plantations and 91 breeding estates whose products are excellent.

The cotton and woolen fabrics, striped cloths and blankets are not inferior to foreign articles.

At Uberaba, *sugar cane*, *coffee*, *manioc* and *cotton* are cultivated; *indigo* grows spontaneously, and *cattle*, large and small, are extensively bred.

Marianna has over 12 *retiros* (breeding estates) which produce near upon 3,000 head of horned cattle, horses and mules.

At Juiz de F6ra, besides alimentary products, *coffee* is cultivated and a large number of *pigs* are bred.

Tobacco grows wonderfully well at Christina; the yearly exports amount to 100,000 arrobas (1,468,400 kilograms.)

Wheat is raised at Santa Barbara, and *olives* on the face of the Mantiqueira range.

Minas-Novas cotton is exceedingly white.

The valley of the Rio Grande extends for about 800 leagues, of which 160, with a breadth of 70, belong to the province of Minas; the soil is very fertile; some products yield from 120 to 200 for one; *sugar cane*, *coffee*, *cotton*, *hops*; the *mulberry tree*, *rye*, etc., produce amazingly on that fruitful soil; the prairies

provide excellent natural herbage in such abundance as to suffice not only for the cattle wintered on them but also for grazing the live stock exported to Rio de Janeiro; the forests abound in timber, such as *cedar*, *rosewood*, *vinhatico*, *violet wood*, &c.

The plains of Sarapuhy and Rio Verde produce excellent tobacco.

Pomba, S. João Nepomuceno and Araxá prepare nearly 800,000 kilograms of tobacco.

Ayuruoca is excellent for raising *maize*, *beans*, *rice*, *sugar cane*, *tobacco*, and *manioc*. *Wheat* prospers well; on the face of the Mantiqueira range the *olive tree* may be planted, and on the dry lands of the district the best *hay* is made.

At Pouso-Alegre, *tobacco*, *coffee* and *tea* are cultivated besides *cereals*.

The *cereals* raised at Christina not only suffice for the population but large quantities are exported.

At Oliveira there are upwards of 50 mills.

Mar de Hespanha, Araxá, Pomba, S. João Nepomuceno and Ubá export annually, 35,000,000 kilograms of coffee.

Pitanguy is one of the richest districts of Minas-Geraes, owing to the extensive culture of *sugar cane* and *cotton*, and to the existence of several manufactories.

Minas-Geraes has soil well adapted for the growth of the *vine*, especially the American.

One alqueire of 11,000 square metres of land produces 50 pipes of wine.

Of the four central provinces which supply Rio de Janeiro with beef, Minas-Geraes occupies the first place. Besides the *curralinho* and *brucho* oxen of superior quality, the province has the *colonial* or *true* cattle which came from the colony of Sacramento, in Montevideo, and the *Nile* and *Chinese*, which appears to have been imported from India.

From crossings between the *Nile* and the *colonial* very good animals, weighing 30 arrobas have been bred. At present, crossings with *Alderney*, *Schwitz* and *Breton* cattle are under trial, and favorable results are expected.

The stock breeders in Minas are classed as *generalistas* and

sertanistas. The former living near the frontiers of the province devote themselves to the manufacture of dairy produce, the latter, central, breed and sell live stock.

Pigs are also largely bred for their bacon, meat and other products exported to the Rio de Janeiro market.

The succulent and extensive prairies of the province, the abundance of maize, which is excellent food for swine, combine to make this industry, when well managed, very lucrative, large fortunes having been realized by it.

The *fleeces* obtained from the few sheep bred in the province are manufactured into blankets, coarse and fine cloth and hats.

The *breed of horses* which had degenerated completely, commences to improve: some strong, bulky individuals of the *Percheron* breed, and some saddle horses, crosses with the English *hunter*, are now to be seen.

Trials are making to rear the *silk worm*; *bees* yield very good profits.

The number of fodder plants exceeds 400, all evidently nutritive.

There are 15,000 or 20,000 agricultural establishments scattered over this vast province.

Besides other factories in different localities, the province has the *Canna do Ribeiro* mills with 15 operatives, 240 spindles and 5 looms, making 28,000 metres of cloth, worth 10,000, \$000.

In the province of Minas-Geraes there are two colonies; D. Pedro II was founded in 1858 by the União and Industria Company, in the neighborhood of Juiz de Fôra. On it there are nearly 1,400 persons, almost all Germans; it covers an area of 1,642 hectares, besides 60 acres distributed in lots; 1,626 hectares are at present under culture.

The soil produces cereals, vegetables, fruit, coffee and leguminous plants.

Stock is bred in a very small way.

The colony of Mucury has 721 inhabitants, the population of Philadelphia being 6,276 free men.

An area of 1,885,065 hectares are cultivated.

The south of Minas exports annually to Rio de Janeiro,

| | | |
|-----------------------|-----------|------------------|
| Horned cattle..... | 70,000 to | 80,000 head. |
| Pigs..... | 25,000 " | 30,000 " |
| Sheep..... | | 10,000 " |
| Bacon..... | | 2,936,800 kilos. |
| Tobacco in rolls..... | | 5,860,000 " |
| Cheeses..... | | 150,000 |

In the province of Minas-Geraes there are the following mills :

| DISTRICTS. (1) | Mills. | | Agriculturists. |
|-----------------------------------|--------|------|-----------------|
| | Cane. | Saw. | |
| (*) Campanha | 67 | 18 | 245 |
| Christina | 8 | 7 | 68 |
| (*) Alfenas | 49 | 21 | 192 |
| (*) Tres-Pontas | 57 | 10 | 205 |
| Lavras | 44 | 6 | 213 |
| (*) Pouso-Alegre | 57 | 15 | 223 |
| Boa-Esperança | 32 | 9 | 90 |
| (*) Jaguaray | 7 | 3 | 89 |
| (*) Caldas | 6 | 11 | 88 |
| (*) S. Sebastião do Paraíso | 9 | 3 | 105 |
| (*) Cabo Verde | 26 | 15 | 64 |
| (*) Passos | 63 | 18 | 170 |
| (*) S. José do Paraíso | 18 | 4 | 41 |
| (*) Itajubá | 11 | 8 | 115 |
| Baependy | 26 | 18 | 197 |
| (*) Ayuruoca | 18 | 3 | 139 |
| Total | 498 | 169 | 2252 |

GOYAZ.

This province, like Matto Grosso, is of great size, with a relatively small population; its area measures 1,132,560 square kilometres, with 149,743 free inhabitants and 10,996 slaves.

(1) The districts marked (*) cultivate coffee; the fruit bearing trees amount to three millions.

The climate of the province is hot and dry, except in the wooded districts; the soil is fertile, especially in the neighborhood of the rivers and on the faces of the mountains.

Medicinal plants, building timber, Brazil wood and camwood, and a number of wild animals, of every species, are the natural productions. *Rice, sugar, cotton, maize, manioc, etc.*, are raised to supply the requirements of the population, the exportation of great quantities of these products being impossible for want of adequate means of circulation.

Tobacco is successfully cultivated, and the quality, to judge from the quantity sold in Rio de Janeiro, is approved by the consumers of this product.

The *cochineal* plant is very common, and *indigo* abounds in the open grounds of the province.

The *vine* may be profitably raised, for experience shows that this plant bears fruit twice a year.

At Pontal and Matança, *manioc, maize, cotton, vegetables, etc.*, are planted; some *live stock* is also bred.

The inhabitants of Natividade, Carmo and Chapada cultivate *sugar cane, cotton, tobacco, maize, manioc and legumes*.

S. Domingos of Araxá has most fertile soil.

At Alho several *cereals* and *fruit trees* are profitably raised. *Horned cattle* and *pigs* are extensively bred, and cotton and woolen cloths are manufactured.

At Sant'Anna, near the Rio das Velhas, *manioc, maize*, and every kind of leguminous plants grow exuberantly and large and small cattle are grazed.

Meia Ponte produces *maize, wheat, manioc, tobacco, cotton, sugar and coffee*; *horned cattle* and *pigs* are reared, and *cotton* and *woolen cloths* are made.

On the banks of the river Corumbá there are large forests, and the soil is celebrated for its fertility.

In general, *stock breeding* prospers in the province, the product being sent to Rio de Janeiro, Maranhão and Bahia.

The two provinces, Goyaz and Pará, are joined by a fair road along the section where the rapids exist, in that part comprised between a hamlet called S. Vicente lately created, in the district of Boa-Vista, on the right bank of the river

Araguaya, and a place named Alcobaça, beyond all the falls. Of the 391 kilometres of this road, 387 are in the province of Pará, through wonderfully fruitful soil fitted for the culture of sugar cane, cotton, coffee, and all articles of food used in the country.

As to the means of conveying the products of Goyaz to a market, we believe that the navigation of the Araguaya, under the direction of Dr. Couto de Magalhães, will offer facilities. Goyaz may also be joined to S. Paulo by way of Santa Anna of Parnahyba, and so avail of the projected railroad to Matto Grosso or by the rivers Grande and Mogy Guassú. (1).

In the province there are nine presidial establishments where *tobacco, cotton, rice, manioc* and *cereals* are cultivated, and where stock breeding thrives on excellent pastures.

The exports of Goyaz in the financial year 1872—1873, were :

| | | |
|-----------------------|------------------|--------------|
| Tobacco in rolls..... | 9,479 kilos..... | 4,745\$000 |
| Horned cattle | 52,434 head..... | 58,887\$8000 |
| Mares and colts..... | 5 “ | 20\$000 |
| Hides and skins..... | 29,690 | 5,939\$00 |

(1) The following information is due to Mr. Fomm :

“In 1819, João Caetano da Silva descended the Rio dos Bois to Goyaz, from Anicuns, distant 12 leagues from the capital to its mouth, in the river Parnahyba ; went down this river and the Paraná as far as the Tiete and up this river, having avoided the falls of S. Simão and S. André in the river Parnahyba, by drawing his canoes along the banks of the river.

“Dr. Antonio Affonso de Aguiar Whitaker, Judge of the district of Rio Corumbá, made last year the same survey as far as the falls of S. Simão, in the dry season, and verified that, from Anicuns, as far as the falls of S. Simão, there is no serious obstacle to steam navigation between these two points.

“There are steamers already on the Mogy-guassú, in S. Paulo, and the obstacles which exist between the mouth of the river Mogy-guassú affluent of the Rio Grande, and the falls of S. Simão, may be avoided by a road from the first rapids of the Rio Grande to beyond those falls.

“If communication be so established between the two provinces, the journey between the capital of the Empire and the capital of the province would be reduced to 15 or 16 days, via. Santos, whereas now the post takes 35 days, troops of mules 60 or 70, and bullock carts three months.

“When Mr. Whitaker was in Rio, about a month since, he handed to H. M. the Emperor, and to the Minister of Agriculture, copies of his diary of the journey.

“An alqueire of salt costs there 20\$000 ; a bottle of common wine 3\$000, and a bottle of ale 3\$500.,,

MATTO-GROSSO.

It is supposed that the province of Matto-Grosso occupies an area of 2,090,880 square kilometres for a population of only 60,417 inhabitants, including 7,064 slaves.

The climate is in general salubrious, varying according to altitude and to the lay of the mountains.

The soil stands considerably above sea level, and is mountainous. Covered as it is with magnificent forests never yet explored and inhabited by millions of aborigines, the province abounds in wild animals of every kind, curious quadrumanes, savage quadrupeds, excellent tortoises, birds of the most varied colours; rivers abounding in fish wind through and fertilize a soil fit for every kind of culture, and which only awaits means of communication and a stream of strong and diligent immigrants to prove how much may be obtained from its natural advantages.

In the province of Matto-Grosso *rice*, *indigo*, *vanilla*, the *cochineal cactus*, *copahyba*, *India rubber*, etc., grow spontaneously and abundantly.

Sugar cane, *tobacco*, *cotton*, *wheat* and all *leguminous plants* are cultivated.

On the high lands *coffee* grows as no where else; there are trees that yield from 5 to 6 kilograms of product.

The sugar cane produces in an extraordinary manner on the banks of the rivers. The traveller Bartholomeu Bossi (1866) affirms that it is sometimes necessary to thin the plantations in order to check the monstrous production. There are plantations forty years old which preserve all their vigour.

The *cotton* tree attains to a gigantic size, and gives on an average, 5 kilograms of product of a superior quality.

Rice, as already said, grows spontaneously and in great abundance, the only labor required being for picking and cleaning it.

The *tobacco* has excellent qualities and resembles Havana; it is easily cultivated on the banks of the rivers.

Manioc roots are rarely less than 3 palms (66 centimetres) in length and proportionally thick, producing 500 for one.

Maize gives 200 for one.

The cultivation of wheat ought to be very important for Matto-Grosso. Its soil and climate well adapted for this cereal ought to free the province from the burthen of paying from 20 to 40 dollars for a barrel of flour imported.

Vanilla in large quantities is met with between Diamantina and Villa Maria; it is larger than Mexican, and of an agreeable aroma.

India rubber abounds in the north of the province of Matto-Grosso. In quality, it is not inferior to that which constitutes the chief source of wealth of the province of Pará.

Extensive *herbaes* are scattered over the province which may compete with Paraguay and other neighbouring provinces.

Medicinal plants, such as *quinquina*, *manna*, *cinnamon*, *ipeca-cuanha*, *sarsaparilla*, *dragons blood*, *espigelia* and numerous other therapeutic agents enrich the fields and forests of Matto-Grosso.

Wax and *honey* abound, due to an infinite variety of bees.

Being, however, at a great distance from consuming markets, this province receives no compensation adequate to the fruitfulness of its soil and to its abundant crops, and is therefore confined to breeding live stock, its only export.

In the opinion of M. Bossi, the localities most fitted for colonization, are found at Villa Maria, owing to the facilities with Bolivia; at Poconé, owing to the abundance of the crops; at Chapada, not only because it is seven leagues distant from Guyabá, but also on account of the extreme fertility of the soil; Corumbá and Albuquerque, the first Brazilian ports up the river Paraguay.

The difficulties of land conveyance for the agricultural products of Matto-Grosso, will shortly be obviated by the establishment of the projected railroad between this province and Paraná.

Military colonies.—There are two: Dourados, which furnishes timber, *palmettos* (palm cabbage) *herba mate* and *cereals*; and Miranda, in the same conditions.

